Work 'n' Play in the Informational City

F2F interaction and emerging work and leisure patterns

by
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Submitted to the School of Architecture and Planning in Partial Fulfillment of the Requirements for the Degrees of Master of Architecture and Master in City Planning at the Massachusetts Institute of Technology, June 1999

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ABSTRACT

The *death of distance* does not equal the death of cities and of urban life. Cities are transforming their roles and functions in reaction to a major technological shift --from post-industrial to informational. And contrary to popular belief, new telecommunications infrastructure will increase the significance of some cities as important *physical* meeting places. A host of new network cities have emerged from this new global infrastructure which supports the rapidly growing world of information technology. These cities, once the centers of manufacturing, are now the centers for the production of information that is distributed electronically around the globe. Contemporary cities are not just dense physical agglomorations of buildings, the crossroads of transportation networks, or the main center of economic, social and cultural life, but also the electronic hubs for telecommunication networks. Technology has extended the geographic reach of these cities to enable their denizens to interact more, both electronically and face-to-face. And as the material and intellectual basis of our society change due to the new digital revolution, widely accepted dichotomies --in particular, real/virtual, mind/body, local/global and natural/artificial-- are blurred and call for redefintion. New patterns of living and working are also emerging from these changes.

By far, the largest impact of this electronic communication network is on the workplace, particularly in the growing area of *information* work. The workplace is today much more flexible both in terms of time *and* place. I believe that the office, now only one of many workplaces, will be used especially for intense face-to-face and collaborative work. This flexible and more sociable aspect of work and the ubiquitous and fine-grained nature of digital flow is blurring the, once, clear boundary between work and leisure. The thesis proposes an alternative design strategy, one centred around the aspect of work which is highly sociable. The Port Authority Bus Terminal in Manhattan --a defunct but extremely busy hub-- is chosen as the testing ground for mixing work and play. An office-hoteling tower is proposed atop the terminal, occupying its valuable air rights while drawing some of the public flow of people through a vertical series of public places. Keeping with the true spirit of the digital age, where fine-grain mixing and strange hybrids are the norm, the project attempts to redefine the relationship between work and play, public and private, natural and artificial, real and virtual, as well as mind and body,

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Illustrations

1: Habitating the Informational City:
F2F interaction and emerging work and leisure patterns

'If anything can be certain about the future, it is that the influence of technology, especially digital technology, will continue to grow, and to profoundly change how we express ourselves, how we communicate with each other, and how we perceive, think about, and interact with our world. These "mediating technologies" are only in the first stages of their modern evolution; they are still crude, unwieldy, and unpersonalized, poorly matched to the human needs of their users. Their fullest development in those terms is emerging as one of the principal technical and design challenges of the emerging information age.'

http://www.media.mit.edu/mas/

Media Lab, MIT

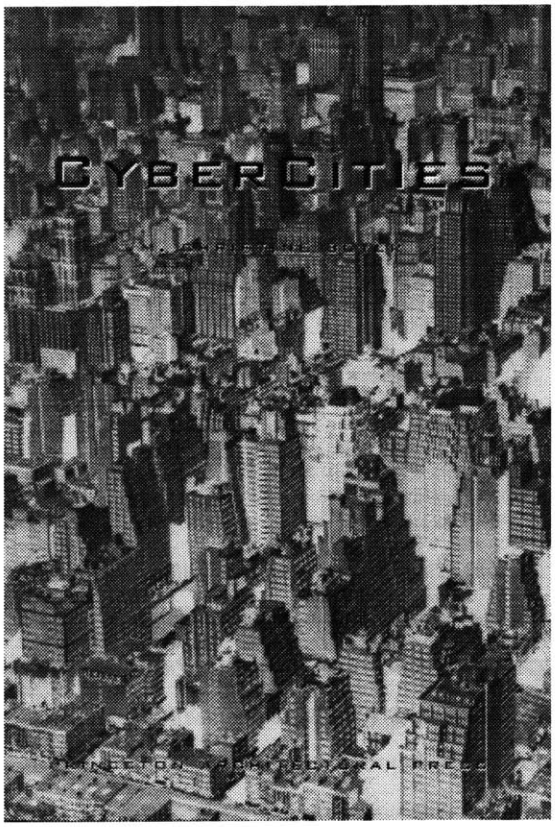


 figure 1.1: Christine Boyer's vision of the contemporary city

1: **Habitating the Informational City:** *F2F interaction and emerging work and leisure patterns*

The death of distance does not equal the death of cities and urban life. Cities are not dying but transforming their roles and functions in reaction to major changes in infrastructure, as they always have. Contrary to popular belief, new telecommunications infrastructure will increase the significance of some cities as important 'physical' meeting places. The development of electronic infrastructure is part of a continued evolution of the emerging network city, which is more than ever before a place of intense physical communication and interaction and a place of face-to-face collective activities, both leisure and culture.

1.1/The Death of Cities and Rise of the Network City

1.2/The Information Age: *Development of the Electronic Infrastructure*

1.3/The Network City: *F2F interaction, and emerging work and leisure patterns*

figure 1.2: the dynamiting of Pruitt-Ilgoe housing project in St.Louis, 1972

1.1/The Death of Cities and Rise of the Network City

Cities are not dying but changing their roles and functions in accordance to a major technological shift. New information technologies are affecting the way people use and inhabit cities as much as new energy generation affected life in the industrial city of the 18th and 19th centuries. *Cities are in the midst of a major transition from a post-industrial to an informational age.*

What would the city of the next millenium be like to work, live or visit?

Or is urban life becoming obsolete because of the "death of distance" phenomenon and the pervasiveness of advanced telecommunications?

introduction

As early as the end of the 1950's, many city theorists and social theorists from Lewis Mumford to Marshall McLuhan predicted the demise of what we have come to know for thousands of years as the city. However, as the second millenium comes to a close, cities are found not only to be around but many of them are thriving like never before in this century—from London and Barcelona to Taipei and Bogota'. Many downtowns are also experiencing a rebirth, from American examples such as Cleveland, Ohio and Las Vegas, to Shanghai and Buenos Aires. The last two decades have shown that the "death of distance" does not equal the death of cities and of urban life. Instead, cities are transforming their roles and functions in reaction to major changes in infrastructure, as they always have in the past.

A significant and obvious shift is that few cities depend upon a unique resource inheritance. Today cities depend on access to information and on environmental quality, which can be enhanced or even generated. This points to an obvious new role for city

planners, policy makers and urban designers alike. Public and semi-public investment will surely be one of the main drivers of urban and regional change in the coming generation, as they lay down an infrastructure of telecommunications and high-speed, clean ground travel. In his recent lecture at MIT, Stephen Graham suggested that '*the continued, perhaps even growing, importance of urban regions, urban assets, face-to-face "co-presence" and physical mobility can occur within a world of spiraling electronic interactions.*'[1]

New patterns of living and working are also emerging from these technological changes. What kinds of work will benefit from being in the city given advanced telecommunications? Will cities, particularly downtowns, be places for living again? What other new roles will cities take? All are important questions that city planners and urban designers of the next millenium must carefully consider.

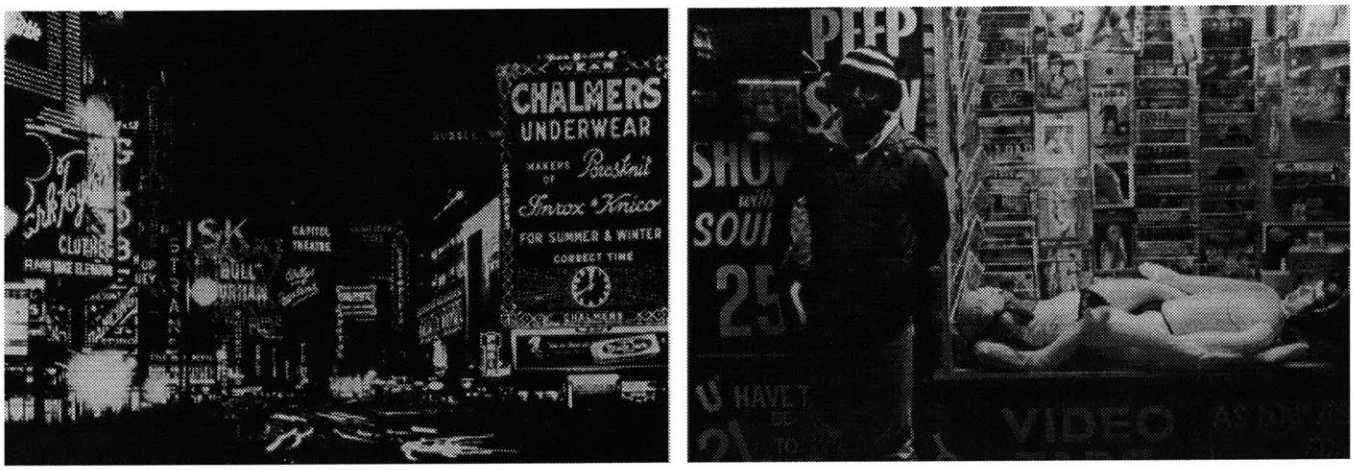


figure 1.3: the changing hub -already dazzling Times Square in 1919 and pornographic Times Square in the 1970's

death of great cities

The city no longer exists except as a cultural ghosts for tourists...Any highway eatery with its TV set, newspaper and magazine is as cosmopolitan as New York or Paris.

Marshall McLuhan, *Verbi-Voco-Visual Explorations,* 1967

As early as the late 1950's when America experienced its first big wave of suburban development, historians and urban theorists predicted the demise of cities. Urban theorists, especially in the 'Decentrist school'[3] led by Lewis Mumford in the early 1960's decried that New York's Midtown was 'solidified chaos'[4] and that centers of cities amounted to 'a foreground of noise, dirt, beggars, and shrill competitive advertising.'[5] Even Jane Jacobs, a great city advocate, has noticed the sorry state of cities which, in her opinion, is a direct result of bad city planning. In her landmark book, *The Death and Life of Great American Cities*[6], Jacobs pointed out that the contemporary city is swamped by,

> 'Low-income projects that became worse centers of delinquency, vandalism and general social hopelessness than the slums they were supposed to replace. Middle-income projects which are truly marvels of dullness and regimentation, sealed against any buoyancy or vitality of

> city life. Luxury housing projects that mitigate their inanity, or try to, with a vapid vulgarity. Cultural centers that are unable to support a good bookstore; civic centers that are avoided by everyone but bums, who have fewer choices of loitering place than others. Commercial centers that are lackluster imitations of standardized suburban chain-store shopping. Promenades that go from no place to nowhere and have no promenaders. Expressways that eviscerate great cities. This is not the rebuilding of cities. This is the sacking of cities.'

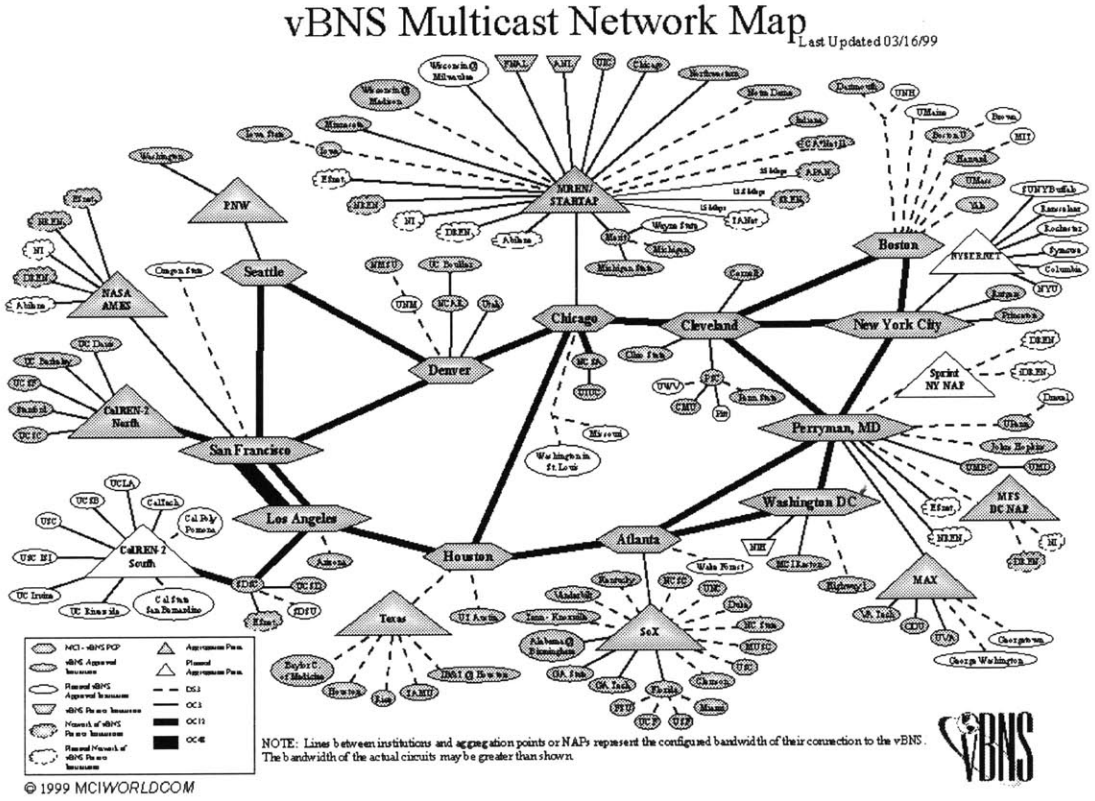
Social theorists such as Marshall McLuhan saw cities as essentially obsolete, while others have proclaimed cities to be 'leftover baggage of the industrial era'[7]. Given this rather bleak and depressing picture of the modern city, it is not surprising that major flights from the city and the resulting rapid suburbanization was the dominating spatial pattern of post-war America.

The traditional 'end of the city' ideology resurfaced again at the height of telecommunication infrastructure development in the last 15 years. This view takes a simplistic assumption that the trade-off between telecommunication and transportation will mean that people will stay home and work through computers and telecommunication networks. But research in the last decade has shown that the pace of telecommuting –that is, working from home- has been slow. The obvious reason, besides the functional relationships between offices, is that people also have social relationships within offices which cannot (yet) be easily constructed outside the office through telephones and computer networks.

Similarly, more than a decade ago futurologists predicted that on-

line shopping would change cities. It was believed that since people could shop from home through the combination of televisions, computers and telephone lines, shopping malls and retail streets would disappear. But our own urban experience today demonstrates that this theory is wrong. Shopping itself is only one of the reasons why people go shopping. People go shopping to find some pretext for social interaction, and functional shopping is only limited to daily or weekly trips for basic needs.

However, changes in the urban infrastructure in the last two decades *do* have some serious spatial implications, though in unexpected ways. Despite the less conspicuous nature of this new 'information infrastructure', its effects are as real and visible as those of rail tracks, large ports and highways. Many new living and working patterns have emerged. In fact, in his new book, *E-Topia*[8], William Mitchell declares that 'Traditional urban patterns cannot coexist with cyberspace.', suggesting a new meaning and role of the city. The question is what constitutes the new network 'informational city'?



20 figure 1.4: a multicast network

rise of the network city

'A network is a series of interconnected nodes. A node is the point at which a curve intersects itself. What is a node, concretely speaking, depends on the kind of concrete networks of which we speak. They are stock exchange markets, and their ancillary advanced services centers, in the network of global financial flows. They are national council of ministers and European Commissioners in the political network that governs the European Union. They are cocoa fields and poppy fields, clandestine laboratories, secret landing strips, street gangs, and money-laundering financial institutions, in the network of drug traffic that penetrates economies, societies, and states throughout the world. They are television systems, entertainment studios, computer graphics milieu, news teams and mobile devices generating, transmitting and receiving signals, in the global network of the new media at the roots of cultural expression and public opinion in the information age.'

Manuel Castells, *The Rise of the Network Society*, 1996

Way back in 1968 Melvin Webber foresaw that as cities move from being manufacturing-dominated to services and communications-dominated centers, a radical new set of geographical dynamics would develop. These are based on the use of telecommunications and fast transportation to link producers, distributors and

consumers across distance in radically new ways. These trends mean that the single, functional heirarchies of cities within nation states that were described within central place theory are breaking down. They are being combined and remade as more interconnected networks linking specialized urban economies across national boundaries via highly capable transport and telecommunications networks. Most see the network city as a relatively contemporary phenomenon, while some theorists actually trace this type of city back to the great cities along major trade routes centuries ago. Manuel De Landa classified a network of Western cities, including Venice and Constantinople, as a system which formed a well-defined but dynamic framework that allowed the trading of goods and people across continents. These cities are relatively disconnected from their hinterland and operate interdependently with one another across apparently inhibiting physical barriers such as oceans, mountains and even language and culture. Now with digital technology, not only the physical barriers are virtually nonexistent, but even differences in language and culture are sometimes reduced to universal bits.

By far the largest impact of this electronic communication network is on the workplace, particularly in the area of 'information' work. Information work is essentially work in the advanced services, including finance, insurance, real estate, consulting, legal services, advertising, marketing, public relations, security, information gathering and management of information systems, but also R&D and scientific innovation. These industries are at the core of all economic processes, be it in manufacturing, agriculture, energy or services of different kinds. They can all be reduced to knowledge generation and information flows. According to Graham[10] *'the use*

of telematics allows multi-national firms to operate a wide variety of production units in many different functional sites while integrating them together in real time-with little respect to traditional barriers of space and time.'[11] The result of this trend is that cities have become places where the large corporation chooses to locate segments of its operation. Castells postulates that "the informational/ global economy is organized around command and control centers able to coordinate, innovate and manage the intertwined activities of networks of firms".[12] However, the overall spatial effects of new telecommunications are quite unpredictable and not so straight forward, as will be explained in the following pages.

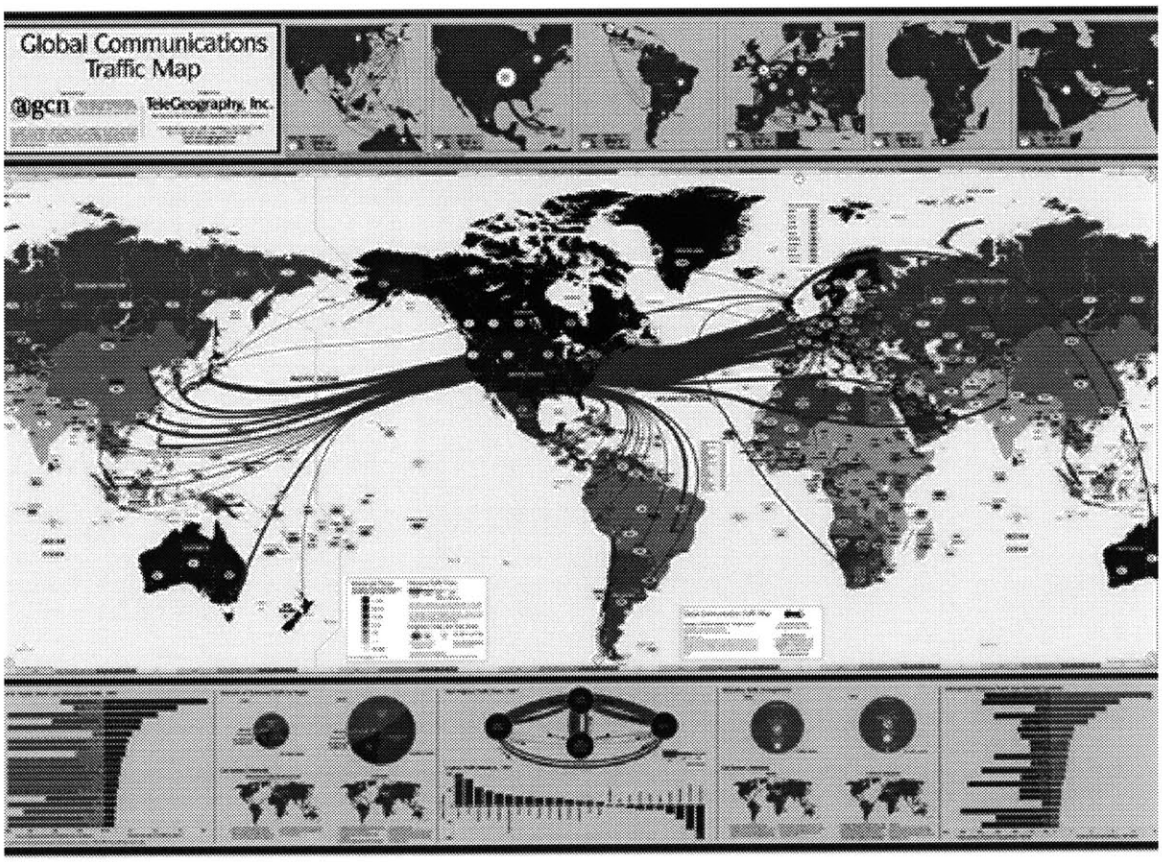


figure 1.5: the global telecommunication network

the global network

'While advances in transportation and communications technologies have long made it possible to disperse both the headquarters and production of manufacturing activities to suburban locations, cities that are centers for information-intensive services (e.g. accounting, advertising, banking, law, management consulting, publishing) are likely to benefit from the greater use of sophisticated information and telecommunications technologies...In fact the greater the extent of geographic decentralization, the greater the need for centralization of key control activities. ***Telecommunications has eliminated the dichotomy between centralization and decentralization and allowed decentralization with centralization*** *(Keen, 1986). Not all cities will benefit from telecommunications technologies. Rather those cities whose economic life is based on the exchanged of information, both face-to-face and electronically, will strengthen by the capacity to participate in the increased global marketplace for business services through communications technologies...'*

Mitchell Moss, *Telecommunications, World Cities and Urban Policy*, 1987[13]

New telecommunications technology, in conjunction with the internationalization of services and finance, are strengthening a handful of world cities such as New York, London, Tokyo, Los Angeles and Hong Kong. These cities, once the centers of manufacturing, are now the centers for the production of information that is distributed electronically around the globe. Communications technologies, by extending the global reach of cities that are centers for information based services, also effect the relationship of a city to its home nation. The destiny of the world information capitals is remarkably independent of their own domestic national economies. Such cities are intricately linked to each other through sophisticated communications networks that operate on an around-the-clock basis. **The face-to-face activities that occur in these cities have not been made obsolete by new technology, rather technology has extended the geographic reach of the individuals and firms that transact in these world capitals.** The operational boundaries of a city is no longer defined by geography or law, but by the reach of phone lines and computer netowrks.

Although the most obvious spatial implication at a global level seems to be that advanced telecommunications systems will make possible the scattered location of advanced services around the globe. However, more than a decade of studies has shown quite a different spatial pattern, characterized by a simultaneous dispersion and concentration of advanced services. On one hand, advanced services have substantially increased their share of employment and investment growth throughout the developed world, there has been a spatial concentration of the upper tier of such activities in a few nodal centers of a few countries. In one

classic study on global cities, Saskia Sassen explains the joint dominance of New York, Tokyo and London in international finance.[14] These three centers together cover the spectrum of time zones for the purpose of financial trading, and work largely as a unit in the same system of endless transactions. However, there are also other pre-eminent systems for other specialized types of trades, for example Chicago and Singapore in futures' contracts. In this type of inter-linked system, once a city joins the network it will rapidly transform, as did Madrid after it joined the European Community in 1986. The global city is therefore not limited to New York, London or Tokyo, even if they are the most important managerial centers of the system. The global city is a network of urban nodes—of network cities—functioning as integral, interdependent parts of the entire global system.

In this scenario, the relative importance of the city-region relationship seems to decrease with respect to the importance of the relationships which inter-link cities of various regions and countries with similar activities. Castells further adds that, "Inside each country, the networking architecture reproduces itself into regional and local centers, so that the whole system becomes interconnected at the global level."[15]

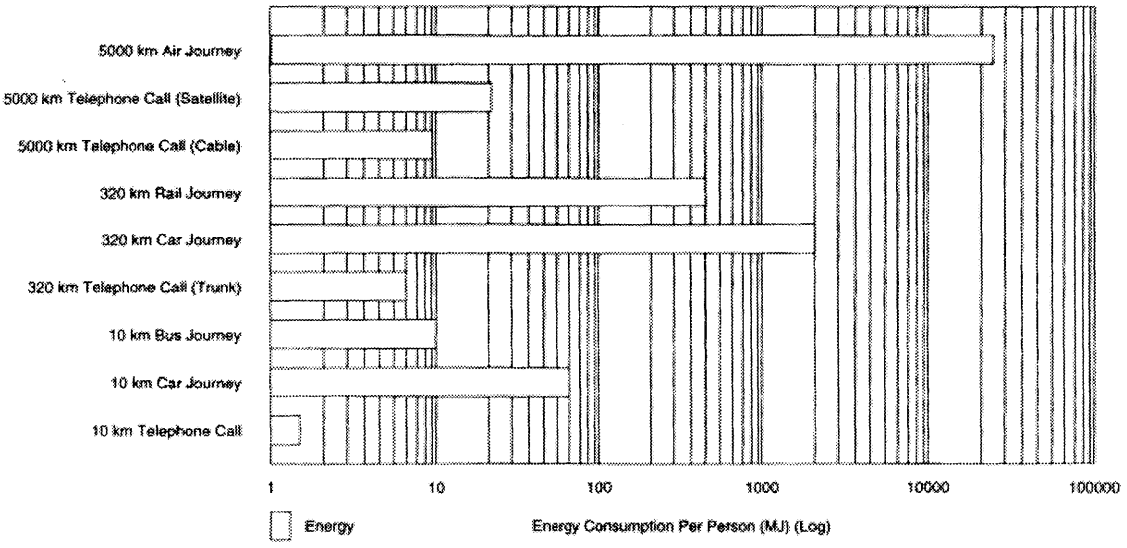


 figure 1.6: energy consumption of ground transport and communication

regional and city implications

The spatial implication of new telecommunications on a regional and city scale is also quite unexpected. For example, it is generally agreed agreed that the home is becoming the basis for electronic mediated forms of interaction. And, therefore, home-based electronic communication was suppose to induce the decline of dense urban forms, and to diminish spatially localized social interaction. Yet, as Castells points out, the first mass diffused system of computer mediated communication, the French Minitel, originated in the 1980's in an intense urban environment, whose vitality and face-to-face interaction was hardly undermined by the new medium. Indeed, French students used Minitel to successfully stage *street* demonstrations against the government.[16] Another compelling example that points to the not-so-obvious implication of new telecommunication technology on spatial patterns is its impact on downtown business districts. It appears to be obvious that advanced telecommunications would make the location of offices ubiquitous, thus enabling corporate headquarters to quit expensive, congested and unpleasant central business districts for custom-made sites in beautiful spots around the world. Yet Mitchell Moss' empirical analysis on the impact of telecommunications on Manhattan's business in the 1980s found that these new advanced communications facilities were among the factors responsible for slowing down corporate relocations away from New York.[17] An explanation as to why advanced service systems still agglomerate in a few large metropolitan nodes, such as New York, London and Tokyo, was offered by Saskia Sassen when she argued that:

'The combination of spatial dispersal and global integra-

> tion has created a new strategic role for major cities. Beyond their long histories as centers for international trade and banking, these cities now function in four new ways; first, as highly concentrated command points in the organization of the world economy; second, as key locations for finance and specialized service forms...; third, as sites of production, including the production of innovation in these leading industries; and fourth, as markets for the products and innovations produced.'

These cities, or rather their business districts, are information-based, value production complexes, where corporate headquarters and financial firms can find both the suppliers and the highly skilled labor they require. They constitute the networks of production and management, whose *flexibility* needs *not* to internalize workers and suppliers, but to be able to *access* them when it fits, and in the time and quantities that are required in each particular instance. This is the *flexibility* and *accessibility* in the physical aspect of the work which must match its digital counterpart as closely as possible for these businesses to function smoothly and competitively. Furthermore, face-to-face contacts for critical decisions are still crucial and hardly replaceable by the telephone or any other form of digital telecommunication. And, finally, major metropolitan centers still offer the greatest opportunities for the personal enhancement, social status and individual self gratification of upper-income professionals, from good schools for their children to symbolic membership at the heights of conspicuous consumption, including art and entertainment.

Nevertheless, advanced services, and even more so services at

large, do indeed disperse and decentralize to the periphery of metropolitan areas, to smaller metropolitan areas, to less developed regions and to less developed countries, as countless cases of multinational corporations have shown. Yet, in almost all instances, decentralization of office work creates "back offices", that is the mass processing of transactions that originated as strategies decided and designed in the corporate centers located in central business districts. A clear example of this phenomenon is the relocation of "back office" media functions, such as the recent relocation of the New York Times printing functions out of Manhattan.

In order to understand the real impact of new information technology on the city it is important to see this new, mainly digital, infrastructure, as a continuation of the larger technological evolution which consequently drove the infrastructure development of cities. The marriage of advanced telecommunications, digital technologies and computers constitutes the global, electronic infrastructure.

notes

[1]Stephen Graham, "Planning Cyber Cities? Integrating telecommunications into urban planning", MIT, Dec 2, 1999

[2] M.Mcluhan, "The Alchemy for Social Change", Item 14 of *Verbi-Voco-Visual Explorations*, New York, Something Else press, 1967

[3] A group of American planners in the 1920's who adopted the ideas from the 'Garden City' movement invented at the end of the 19th century by Ebenezer Howard in reaction to London's urban conditions. One of the group members, Catherine Bauer, has coined the name 'Decentrist' to reflect the group's central idea of decentralizing great cities, thin them out, and disperse their enterprises and populations into smaller, separated towns. The 'Decentrists' included figures such as Lewis Mumford, Clarence Stein, Henry Wright and Catherine Bauer.

[4] Mumford, *The Culture of Cities*,..

[5] Bauer, ...

[6] New York, Vintage, 1961

[7] George Gilder, *Forbes ASAP*, February 27, (1995:56)

[8] Mitchell, (1999)

[9] Castells, (1996:470)

[10] Graham, (1996:59)

[11] telematics are the network combination of telecommincation, computing and media technologies.

[12] Castells, "Vol I: The Rise of the network Society", *The Information Age: Economy, Society and Culture*, Blackwell, Oxford, 1996.

[13] Moss, (1987:536)

[14] S. Sassen, *The Global City: New York, London, Tokyo*, Princeton NJ, Princeton university Press, 1991

[15] M.Castells, "Vol I: The Rise of the network Society", *The Information Age: Economy, Society and Culture*, Blackwell, Oxford, 1996.

[16] Ibid.

[17] M. Moss, "Telecommunications, world cities and urban policy", *Urban Studies*, 24, 1987.

[18] J. Jacobs, *Death and Life of Great American Cities*, p....

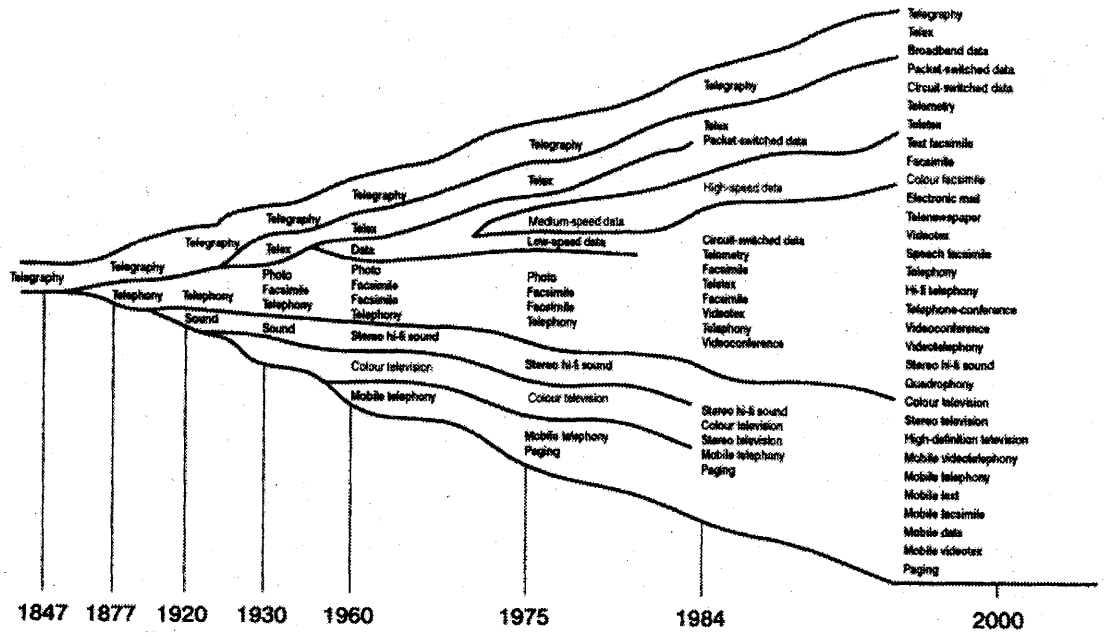


 figure 1.7: expanding range of telecommunication services

1.2/The Information Age: *the Development of Electronic Infrastructure*

'The information age is ushering a new urban form, the informational city. Yet, as the industrial city was not a worldwide replica of Manchester, the emerging informational city will not copy Silicon valley, let alone Los Angeles.'

Manuel Castells, *The Rise of the Network Society*, 1996

What constitutes the worldwide digital information infrastructure?

What form does this infrastructure take?

And what kind of transformation does the city have to go through for these shifts to occur?

introduction

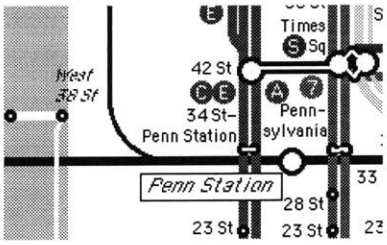
The expanding new global infrastructure which supports the rapidly growing world of information technology led to the emergence of a host of new network cities (and their stark contrast to the have-not or rather non-connected neighbors). This new telecommunications infrastructure will increase the significance of some cities as important 'physical' meeting places and leave others behind. The connective and network nature of the system is also important in understanding its workings and effects.

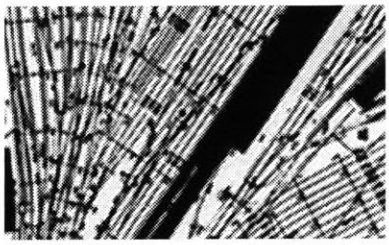
the development of electronic infrastructure

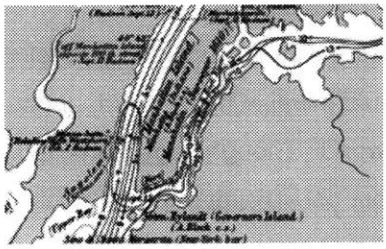
'Toward the end of the second millennium of the Christian Era several events of historical significance have transformed the social landscape of human life. A technological revolution, centered around information technologies, is reshaping at accelerated pace, the material basis of society.'

Manuel Castells, The Rise of the Network Society, 1996

Many physical characters of cities are a direct result of new infrastructure development, which is in turn, a consequence of a major technological change. Information technologies are no exception. The marriage of advanced telecommunications, computers and digital technologies constitutes today's global, electronic infrastructure which has, in recent years, changed the way many people live and work. Infrastructure development is and has always been, directly related to time of travel, of people, of goods and services, or of information. In the past, the development of navigation not only connected many new peoples and places, but also shortened the time of travel between existing destinations. The development of railways has also sped up the movements of people and goods. However, it was not until the first telegraph was sent that information could travel at high speed, unbounded by the limits of the material world. Though large ports, rail yards and highways made the most conspicuous marks on the landscape of the city, the invention of early information technologies, such as the telegraph and the telephone, made no lesser marks on our everyday existence. The car alone, without the telephone and the TV, cannot successfully create suburbia.







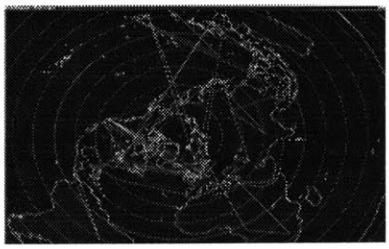


figure 1.8: electronic infrastructure as a continuation of urban infrastructure evolution

A list of what constitutes information technologies according to Castells includes 'the *converging set* of technologies in microelectronics, computing, telecommunications/broadcasting, and optoelectronics. In addition, unlike some other analysts, I also include the realm of information technologies, genetic engineering and its expanding sets of developments and applications.'[2]
This technological revolution is based on information, just as the first industrial revolutions were based on energy. According to Castells what is specific to the informational mode of development (as opposed to, for example, an industrial one) is that '*information processing is focused on improving the technology of information processing as a source of productivity, in a virtuous cycle of interaction between the knowledge sources of technology and the application of technology to improve knowledge generation and information processing*'.[3]

Another important point postulated by Castells is that 'because information has something to do with the manipulation of symbols –and therefore with intelligence and the human mind–is is that for the first time productive forces and culture in society have become directly tied and interdependent.'[4]

As part of the urban transformation from post-industrial to infromational, cities are filled with '*gigantic invisible cobwebs*' of optic fiber, copper cable, wireless, microwave and satellite communications networks.[5] The corridors between cities, whether they be made of land, ocean or space, are in turn developing to house giant meshworks of advanced telecommunication links. These connect the urban hubs together into global electronic girds. Such grids now encircle the planet and provide the technological basis

for the growing flows of telecommunications traffic: voice flows, faxes, data flows, image flows, TV and video signals. *'Instantaneous electronic flows now explode into the physical spaces of cities and buildings and seem to underpin and crosscut all elements of urban life.'*[6]

What constitutes the basic electronic infrastructure can be broken down into two main components; telephony and satellite. Telephony is done through the ground, either by repurposing existing infrastructure (usually using existing phone lines) or actually laying down new fiber optics. There are various types of satellite systems from LEO (Low Earth Orbit) which covers the entire planet to ones with synchronized footprint on earth. How ever, the Internet network is the backbone of global computer-mediated communication (CMC) in the 1990's since it gradually links up most networks. In the mid-1990's it connected 44,000 computer networks and about 3.2 million host computersworldwide with an estimate 25 million users, and it was expanding rapidly.[7]

The Internet, as it is known today, originated in a daring scheme imagined in the 1960's by computer scientists of the US Defense Department of Advanced Research Projects Agency (the mythical DARPA) as an important Cold War tactic to prevent Soviet destruction of American communications in case of a nuclear war. The outcome was a network architecture that, as its inventors wanted, cannot be controlled from any center, and is made up of thousands of autonomous computer networks that have innumerable ways to link up. Ultimately, ARPANET, the network set up by the US Defense Department, became the foundation of a global, horizontal communication network of thousands of computer networks,

that has been appropriated for all kinds of purposes, quite removed from the concerns of an extinct Cold War.

Contemporary cities are not just, therefore, dense physical agglomorations of buildings, the crossroads of transportation networks, or the main center of economic, social and cultural life. The roles of cities as electronic hubs for telecommunications and telematics networks also need to be considered.

notes

[1] Castells, (1996:1)

[2] Castells, (1996:30)

[3] Ibid. (1996: 17)

[4] Castells, (1989:2)

[5] Hillman, (1991:1)

[6] Graham and Marvin, (1996:3)

[7] Castells, (1996:345)

figure 1.9: young Manuel Castells, Berkeley University

1.3/**The Network City:** *F2F interaction and the emergent lifestyle*

Networks constitute the new social morphology of our societies, and the diffusion of networking logic substantially modifies the operation and outcomes in processes of production, experience, power and culture. While the networking form of social organization has existed in other times and spaces, the information technology paradigm provides the material basis for its pervasive expansion throughout the entire social structure.

Maneul Castells, *The Rise of the network Society*, 1996

As high-speed telecommunications develop causing the material basis of society to transform from post-industrial to informational, major cities become highly networked and turn into 'command and control' points of the new informational economy. And as telecommunications allow 'decentralization with centralization', these global cities will also become even more important 'physical' meeting places, while also acting as major centers for leisure and culture. Technology has extended the geographic reach of these cities to enable people in these world capitals to interact more, both electronically and face-to-face. The network city is becoming more and more a place of intense physical communication and interaction, a place of face-to-face collective activities, and of leisure and culture.

New patterns of living and working are also emerging from these technological changes. What kinds of work will benefit from being in the city given advanced telecommunications? Will cities, particularly downtowns, be places for living again? What other new roles will cities take? All are important questions that city planners and urban designers of the next millenium must carefully consider. Section 4 attempts to answer these questions.

2: Expanded Thresholds:

Real/Virtual, Mind/Body, Natural/Artificial, Public/Private

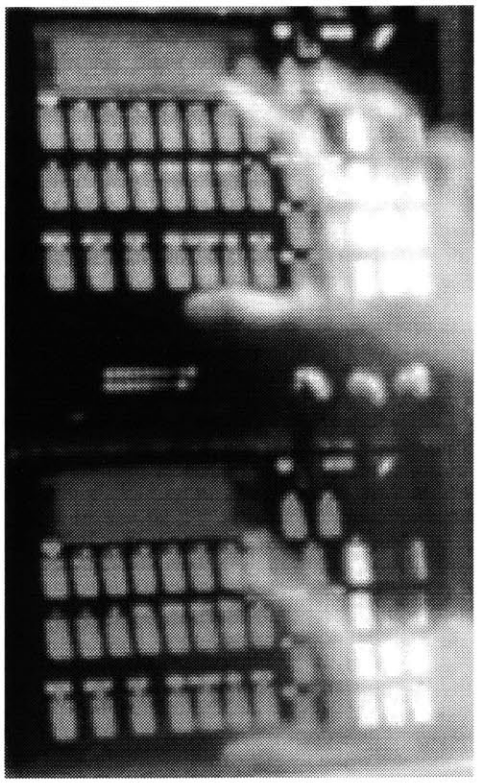


figure 2.1: the theshold between man and machine is now inhabitable

2: Expanded Thresholds; *Real/Virtual, Mind/Body, Natural/Artificial*

As the material and intellectual basis of our society change due to the new digital revolution, widely accepted dichotomies -real/virtual, mind/body, local/global and natural/artificial- are blurre and must be redefined. Our new environment is one highly mediated by electronic flows which has the power to transform many physically different things into a universal digital data of zeros and ones. For example, the invention of multi-media transforms sound, image and text into a single, universal denominator of bits. Previously accepted dichotomies such as that between natural and artificial are not so easily separated with the invention of genetic engineering and Artificial Life. Many of our everyday experience are mixes of different degrees of real and virtual and it is the nexus or the interface between the two is where most attention should be placed. The threshold between these notions is no longer a point but is expanded into a zone of continuity with differing degrees of mixes. The digital era is a time of strange mixes and previously impossible hybrids. Furthermore, the new flexibility from digital technology gives rise to a complex world of multiplicity and a fine-grain mixing of experiences which was not previously possible.

2.1/ Real/Virtual

2.2/ Mind/Body

2.3/ Natural/Artificial

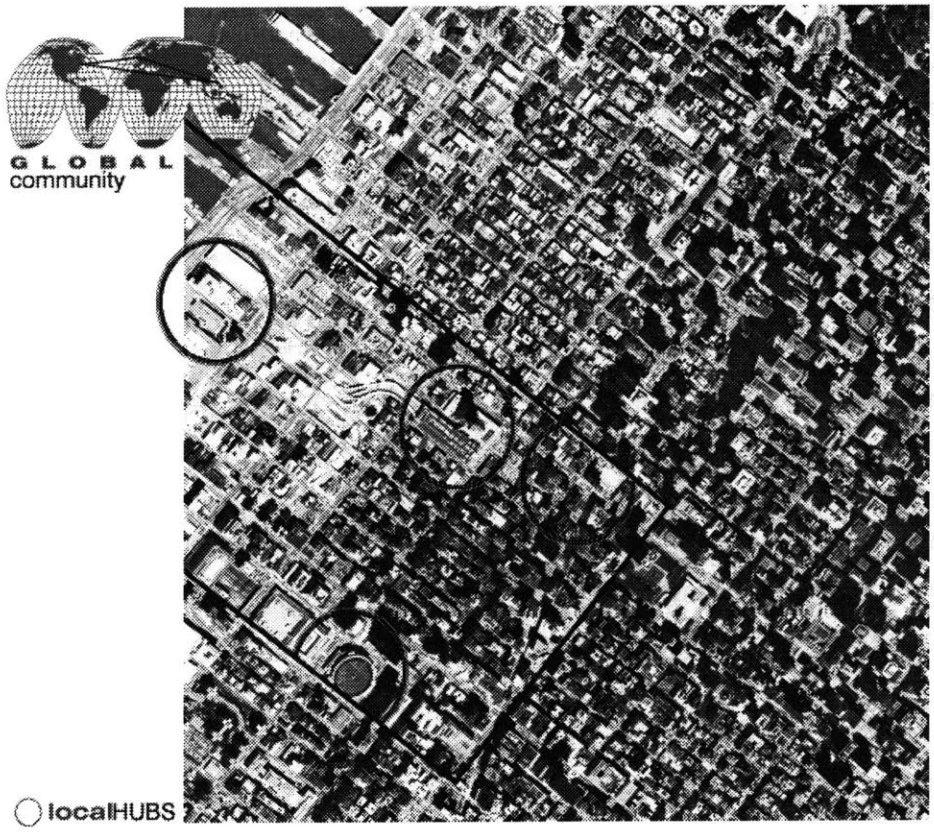


figure 2.2: a real local community can be linked to a virtual global community

2.1/ Real/Virtual

Virtual does not replace real but augments to it. E-mail does not replace face-to-face communication but augments to it –just like the telephone and other high speed virtual communication systems.

'What, in fact, is a true tree? The one perceived in a pause, every detail of which can be visually itemized, every branch and leaf; or the one glimpsed flashing past in the strobo-scopic unfolding of the car windscreen, or else through the strange skylight of television.'

Paul Virirlio, Open Sky, 1997

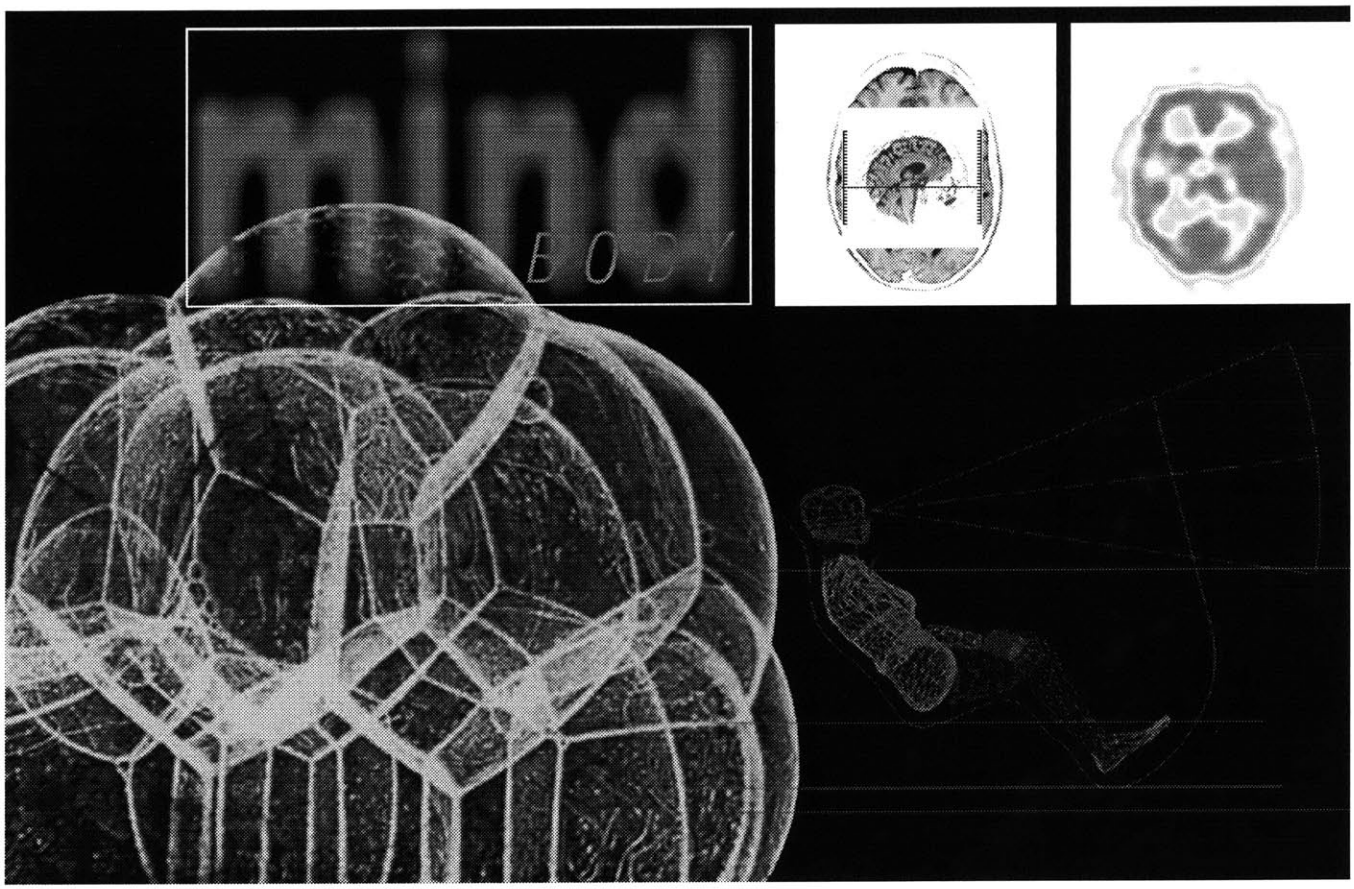


figure 2.3: the user can check e-mail while bathing in the '*surfing tub*'

2.2/ Mind/Body

Mind and body are not two independent and separate entities but are interdependent parts of a single whole.

'Computers, communication systems, and genetic decoding and programming are all amplifiers and extensions of the human mind. the growing integrations between minds and machines, including the DNA machine, is cancelling what Bruce Mazlish calls the "fourth discontinuity" (the one between humans and machines), fundamentally altering the way we are born, we live, we learn, we work, we produce, we consume, we dream, we fight or we die.'

Manuel Castells, *The Rise of the Network Society*, 1996

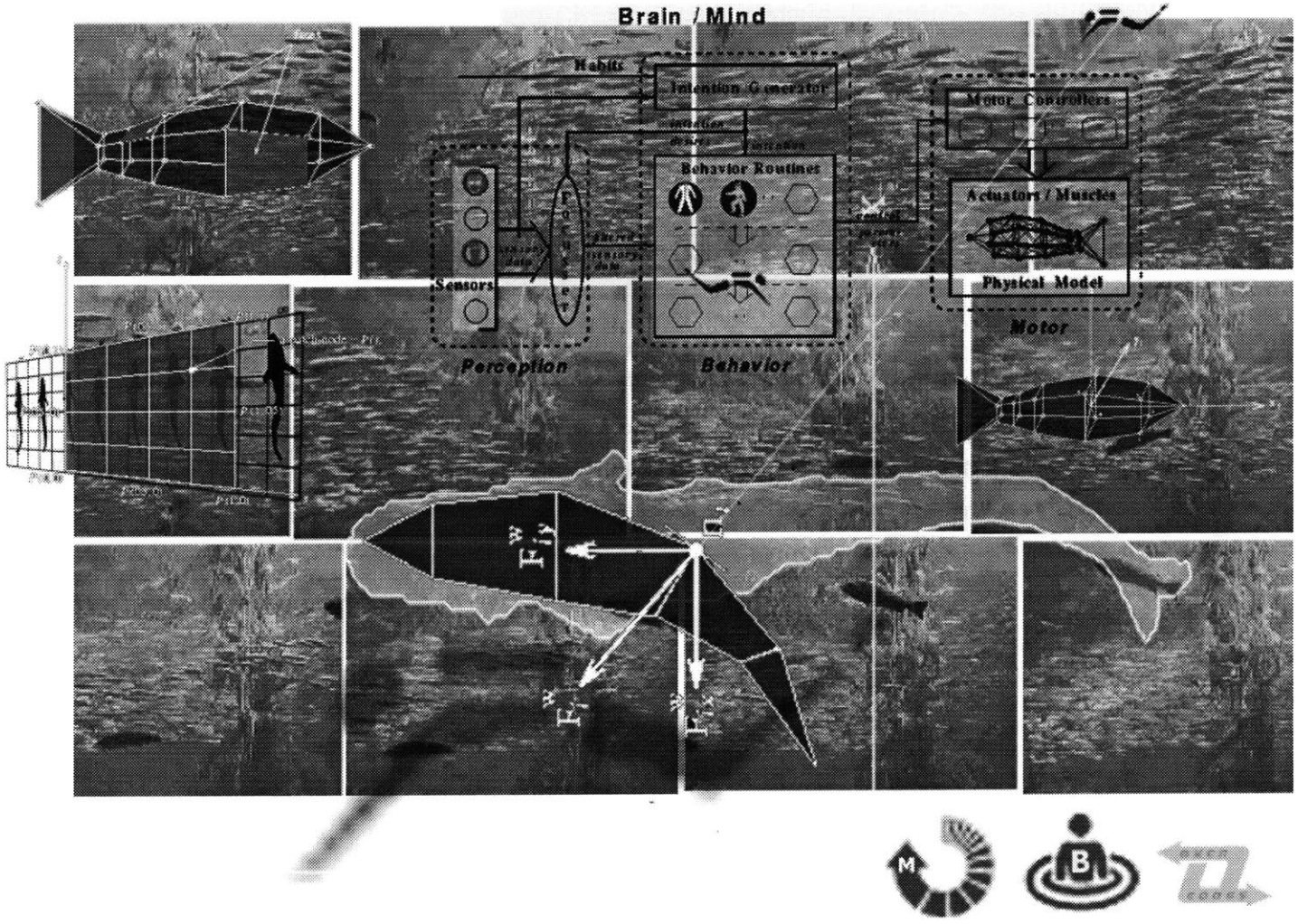


figure 2.4; going scuba diving with Arctic A-Life fish in the *'cyber tank'* at the spa

2.3/ Natural/Artificial

The distinction between natural and artificial is becoming more and more blurred and at times almost futile in helping us understand our surroundings.

'A cyborg is a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction... Contemporary science fiction is full of cyborgs – creatures simultaneously animal and machine, who populate worlds ambiguously natural and crafted. Modern medicine is also full of cyborgs, of coupling between organism and machine, each conceived as coded devices...'

Donna haraway, *Simians, Cyborgs and Women*, 1991

3: Hubs and Flows and the Manhattan Network:
Manhattan as a testing ground

 figure 3.1: King's view of New York, 1908-09

3: Hubs and Flows and the Manhattan Network

Manhattan is used as a testing ground because of its unique place in the global, network economy, as previously mentioned. Digital telecommunications are seen as flows but also people, water and cars are flows. The site model is an analytical investigation of Manhattan as a ***network*** **of** ***hubs*** **and** ***flows*** -of the infrastructure system and the people and other flows that travel through it. Maps of Manhattan from the 1500s are analyzed, deconstructed and reconstructed. The Port Authority Bus Terminal is one of the existing hub, with Times Square, Penn Station and the Javitz Convention Center as other attracting hubs.

3.1/ Manhattan as a testing ground

3.2/ site as a Network of Hubs and Flows

figure 3.2: aerial photograph of Midtown showing site, 1950's

3.1/ Manhattan as testing ground

New York is central to the processes of post-industrial transformation described in section 1, whether by looking at international trades, financial markets, shifting patterns of global investment in manufacturing, or telecommunications technologies. At its core is the Manhattan central business district, where two million people work in 600 million sq feet of office space. the surrounding 30-county region contains another eight million jobs, producing a gross city product of $150 billion and gross regional product of $425 in 1985. half of the city product originates from its advanced corporate sevice firms. [Mollenkopf, Castells, (1991:6)]

Again reasserting earlier points made that telecommuincations are not necessarily linked to the decentralization of offices and office jobs, studies of New York City has shown that the main impact of the massive growth in telecommunications, teleports, and fibre-optic networks in New York has been to increase, not to decrease, the concentration of business transactions and therefore of office space used in central New York City, in particular, Manhattan. This is mainly because of the high-level of concentration of corporate headquarters in New York means that there is demand for sophisticated telecommunicatoins. Therefore the most sophisticated telecommunication facilities are set up in manhattan, and to be on-line with the entire world you must be physically in Manhattan. [Castells, (1989:3)]

figure 3.3: site model demonstrates the idea of infrastructure for flows and the existing PABT.

3.2/ Site as a Network of Hubs and Flows

The site model illustrates the concept of hubs and flows. The Port Authority is already a tentacled extension of Times Square (be it a very decrepit one) and is within walking distance to two other major hubs –Penn Station and the Javitz Convention Center. At the moment the three major hubs are already physically connected by massive flows of people and cars, but they should also be connected digitally –networked together.

infrastructure/hubs and flows

The site model depicts Manhattan's street grid -the infrastructure- which is the main framework for pedestrians and automobiles -the flows. The other, less visible, infrastructure for people moving is the subway which is depicted in the model as a sub layer under the street grid. The two systems are physically interdependent, and to a certain extent, networked together in orer to function effectively. Traveling within the constraint of the infrastructure armature of the city, people, cars and buses are drawn towards major hubs. Large civic places such as stations, large cultural complexes, large sports facilities and parks are hubs within the city and act as attractors for various flows. These flows include not only people but also the city's infrastructure, including water, gas, power and information which are sub-stratas and shown like a soil sample. As intense convergences of urban flows, hubs are the city's raison d'etre'.

figure 3.4: panoramic view around the site

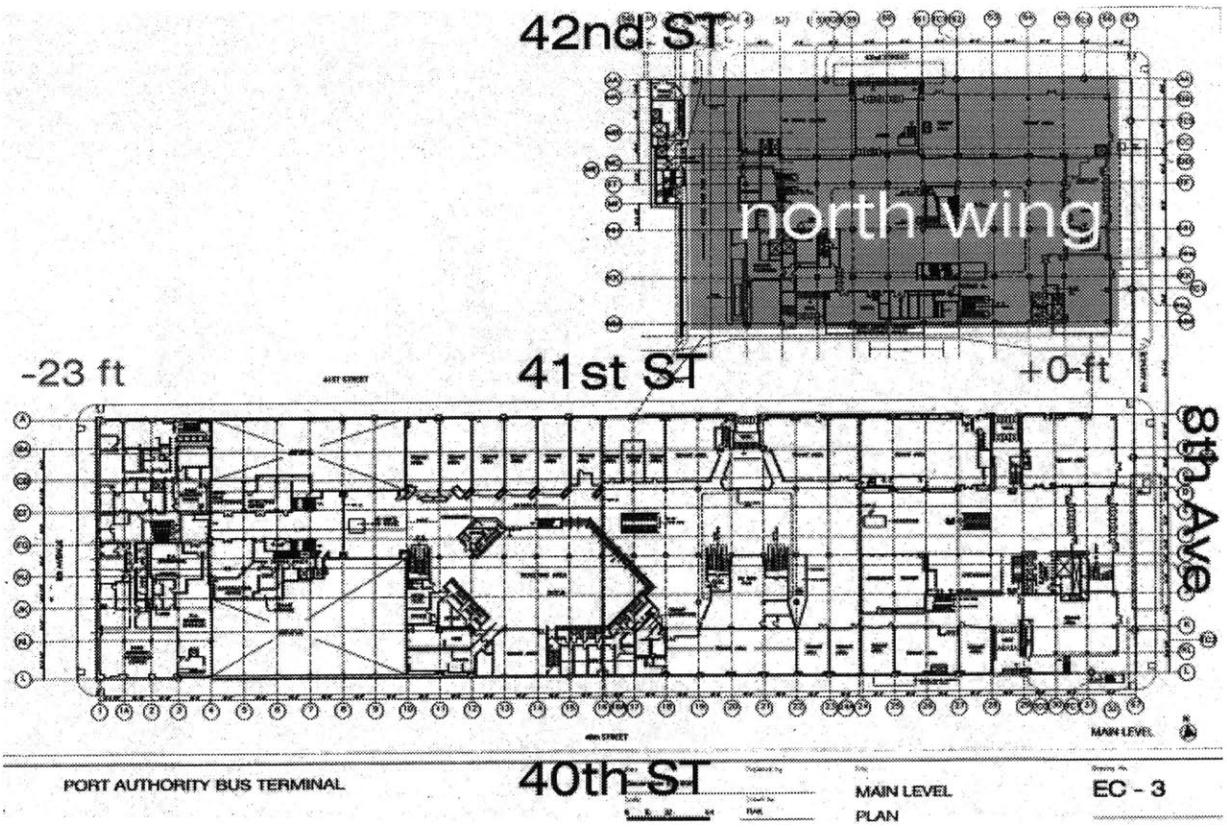


figure 3.5: existing ground floor plan of the PABT

Site: the existing PABT

The Port Authority Bus Terminal (PABT) itself is a major hub, as well as a port -a non-linear infra-structure- to allow intense flows. In 1996, given the development boom in neighbouring Times Square, the PABT created a Request For Proposal (RFP) which proposes a 45-story high-rise office atop its north wing. The station's first structure (south wing) which occupied one block and was bounded by 41st street on its north side and 8th Avenue on its east, was annexed in the 1960s to include the north wing which spans approximately one-half a block between 42nd and 41st streets. In terms of urban form, this addition was a significant move for the station because it extended the Port Authority's facade and front onto busy 42nd Street.

4: Towards a 'Work 'n' Play' Manifesto

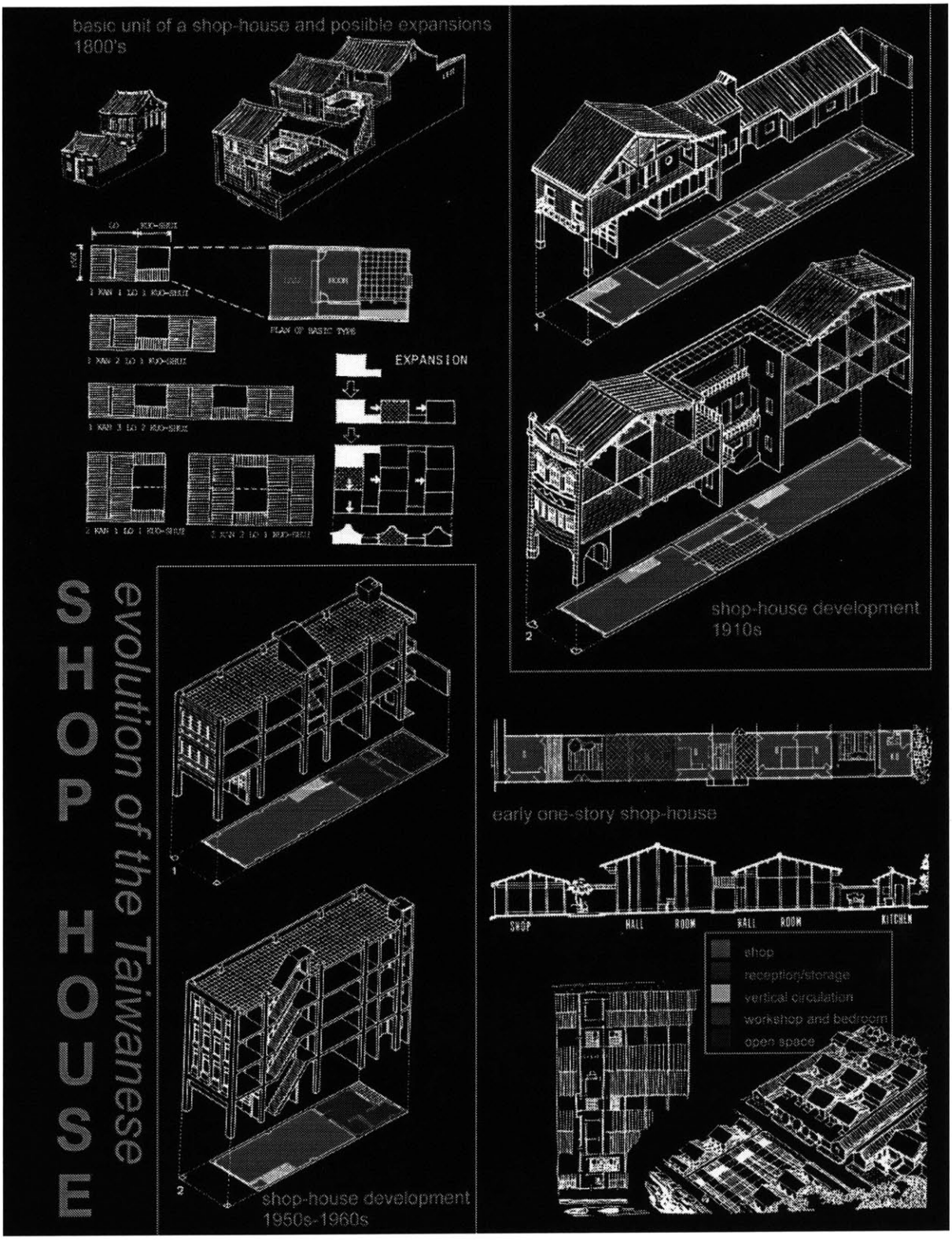


figure 4.1: case study of public (shop), semi-public (reception), private (bedroom) and buffer spaces.

4: Towards a 'Work 'n' Play' Manifesto

The boundaries between work and leisure are blurred by new telecommunications. This section introduces the information worker and the different patterns of work that have emerged in recent years. The new but growing 'flexible work' phenomenon –of time *and* place- is the enabler for the blurring of work and leisure. Significant new practices in today's workplace include flexible work (time and place), telecommuting and office hotelling. A first-take on the modern office hotelling and telecommuting trend –i.e. a contemporary ***live/work*** environment- is my initial case study of the evolution of the Taiwanese shop house type. To further reinforce the already evident pattern of the bleeding boundaries between work and leisure, I propose the ideas of the ***meta-office*** and of ***hyper leisure***. An analysis of the ultimate 20th century workplace –the skyscraper- is done by incorporating the idea of ***fine-grain mixing*** to the hermetic plates and singular core. The culmination of this idea is the 'surf 'n' bathe tub' and the idea of flexible, multiple hybrids – of work/play, real/virtual, mind/body, natural/artificial and public/private. And finally, a new 'Work 'n' Play Manifesto' is on its way.

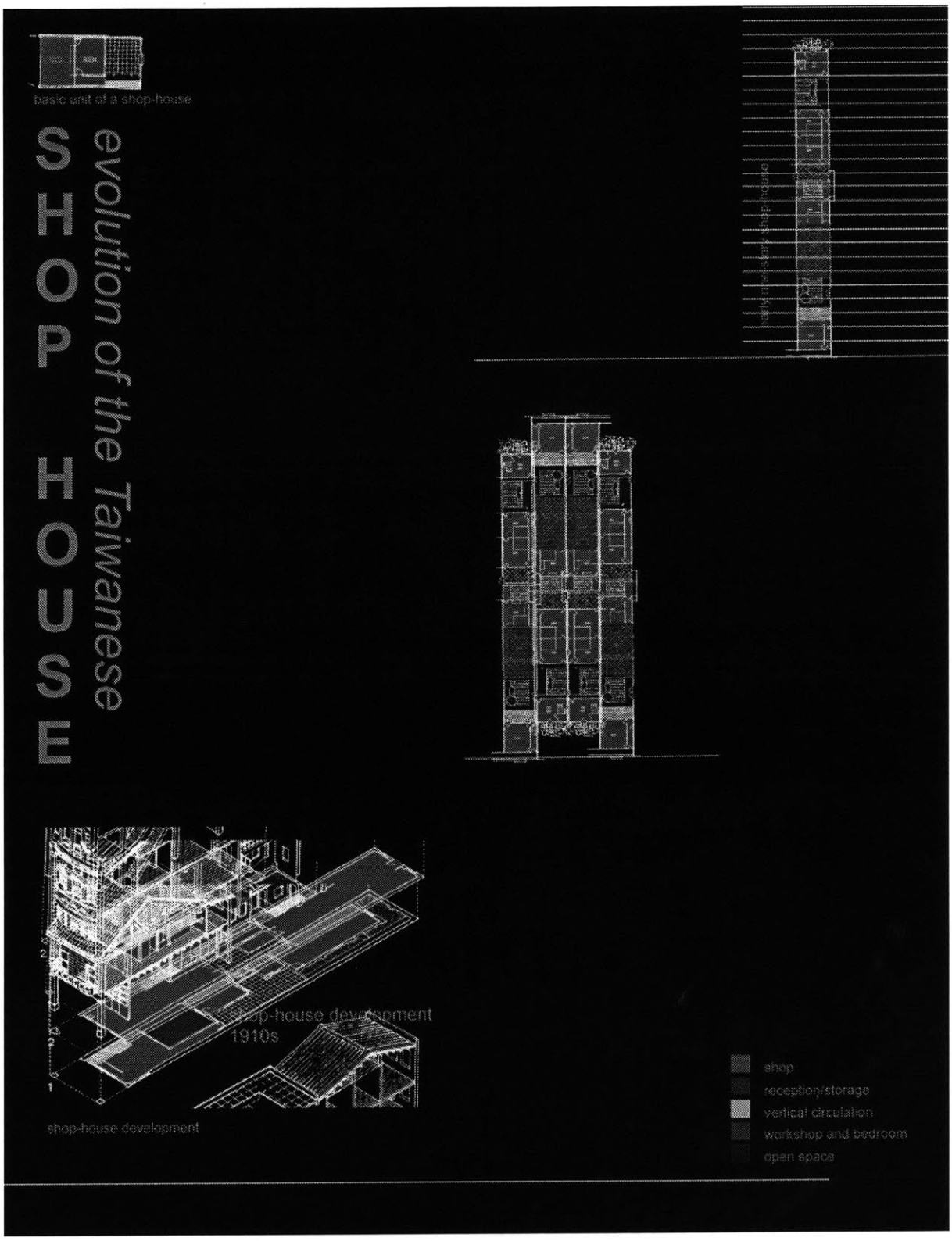


figure 4.2: the plan of a single-story shophouse is analized as a section of a high rise

4.1/ The Re-emerging Live/Work Pattern: *Evolution of the Taiwanese Shop House*

The development of the taiwanese shophouse is analized through the notions of public, semi-public, private and open space.

4.2.1/ Re-Connecting the Hermetic Skyscraper

interactive plate

merging two hermetic plates creates connection and interaction.

multiple circulation

adding different types of circulation to the singular core increases communication

multi-use

plugging in new dwelling units to the solo office use potentiates a live/work environment

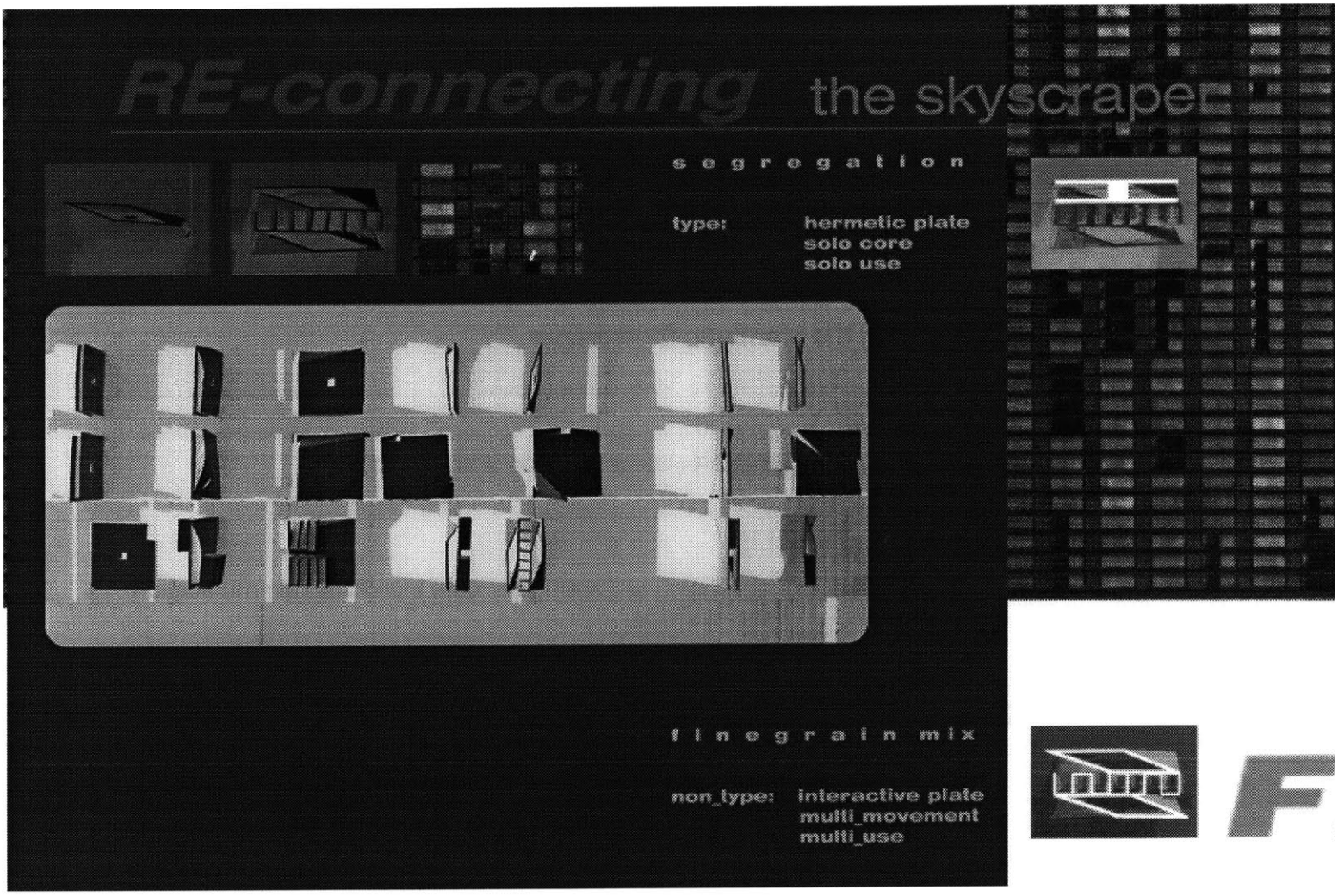
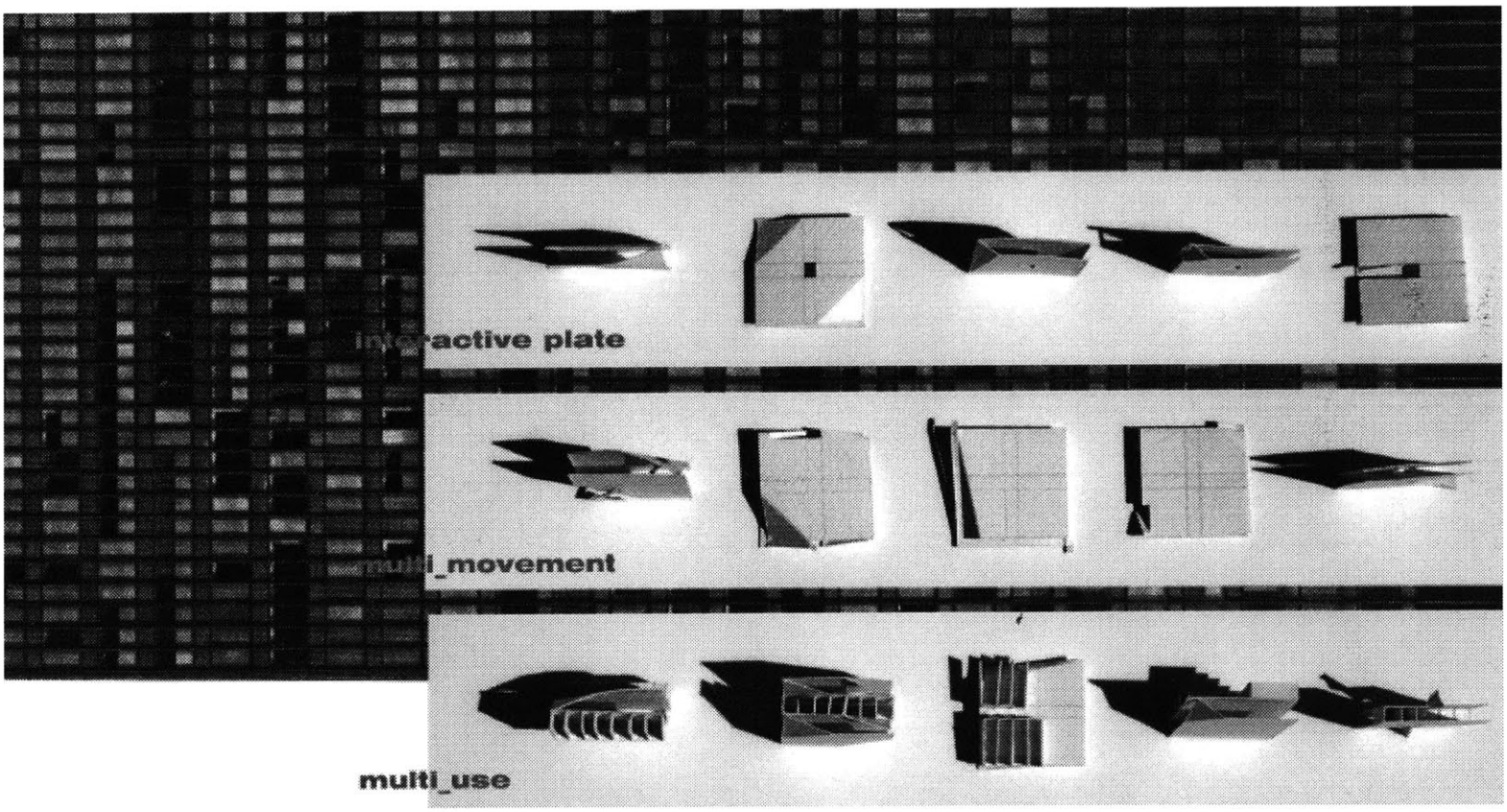


figure 4.3; study: re-connecting the skyscraper



NE GRAIN MIX

figure 4.4; study models/fine grain mixing --scale and sensorial intensityfigure

4.2.2/ **Strategy: *Fine Grain Mixing*:** *activities, scales and circulation*

'Fine grain' is all about scale. It is the breaking down of different daily activities into small though separated compartments. 'Fine grain mixing' is mixing up these different things as you like at all levels and scales. The idea of fine grain mixing at various levels is more plausible than ever now because new digital technology can convert at least some part of any consumption process into bits. Going digital makes work clean and easily divisible, allowing time and place to be more flexible. If a worker can now take a 20-minute break from her spreadsheet and play back-gammon with a virtual friend, then why not go for a 20-minute jog around the block? Shouldn't this be an option? Digital options abound, but not necessarily physical ones. However, virtual entertainment precedents are paving the way for new forms of physical frolic.

Urban Scale

At an urban scale, neighborhoods can be a finer mix of different uses and not segregated into work, shop and sleep. We are still facing with the kind of zoning segregation, which is a vestige of the industrial era when work was typically polluting and unfit to be adjacent to residential uses. The clean nature of information-work allows working and living to mix together comfortably. A mixed-use neighborhood proposes homes, offices, shops, entertainment and other services to exist within walking distance from each other. The mixed-use urban environment is not only convenient and clean but also promotes a 24-hour environment. It will also bring a public life back to the city where people from the same neighborhood can share goods and services again.

Building Scale

In a large building, a finer grain of mix can apply to use, types of circulation, division between public and private, time of use, or even energy consumption. A multiplicity of fine grain mixes can bring diversity and flexibility to the building's everyday life. Take

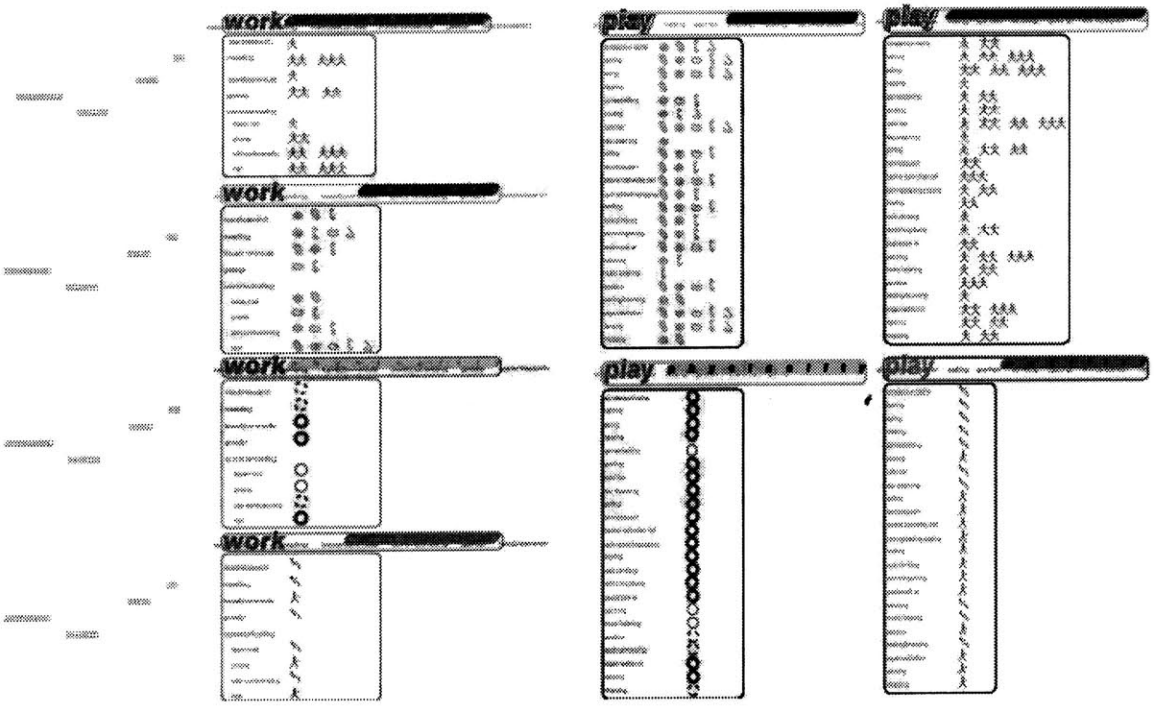


figure 4.5: activities mapping; sensory, mobility, physicality and sociability

a typical downtown office building where the ground floor or lobby is the public space and each office worker has access only to one floor of the building. Typically the vertical circulation is singular and concentrated within the core. This type of building is designed to be 'efficient' (mainly cost-wise) through a high level of segregation –but not necessarily effective. A fine grain mix in a high rise could mean having a diverse range of uses blended throughout the building. Norman Foster's Frankfurt Bank starts to use this idea by having an open garden (which equals shared leisure space) at every 4 levels as opposed to just on the roof level. The circulation of a building is where the most interaction occurs and should have many forms to take full advantage of these interactions. The isolated, singular and hermetic qualities of the skyscraper's floor plate should be deconstructed to enhance interaction and collaboration between floors as much as possible.

Product Scale

Fine grain mixing at a product scale probably entails a challenge to the typical compartmentalization of activities- work or relaxation, for office time or for home time, virtual or real. Now that such distinctions are less clear or greater mixes are possible, everyday objects should also address this fundamental change in our living pattern. The computer, which was initially purely related to work activities, is now also a port for e-mail or checking movie times. It is clearly difficult to decide if its container –now an awkward box- is an object of work or leisure. Objects should be about many things, work and play, real and virtual. Frank Gehry's design of a school bag, which is also a backseat for leaning or napping on is one of those great hybrid

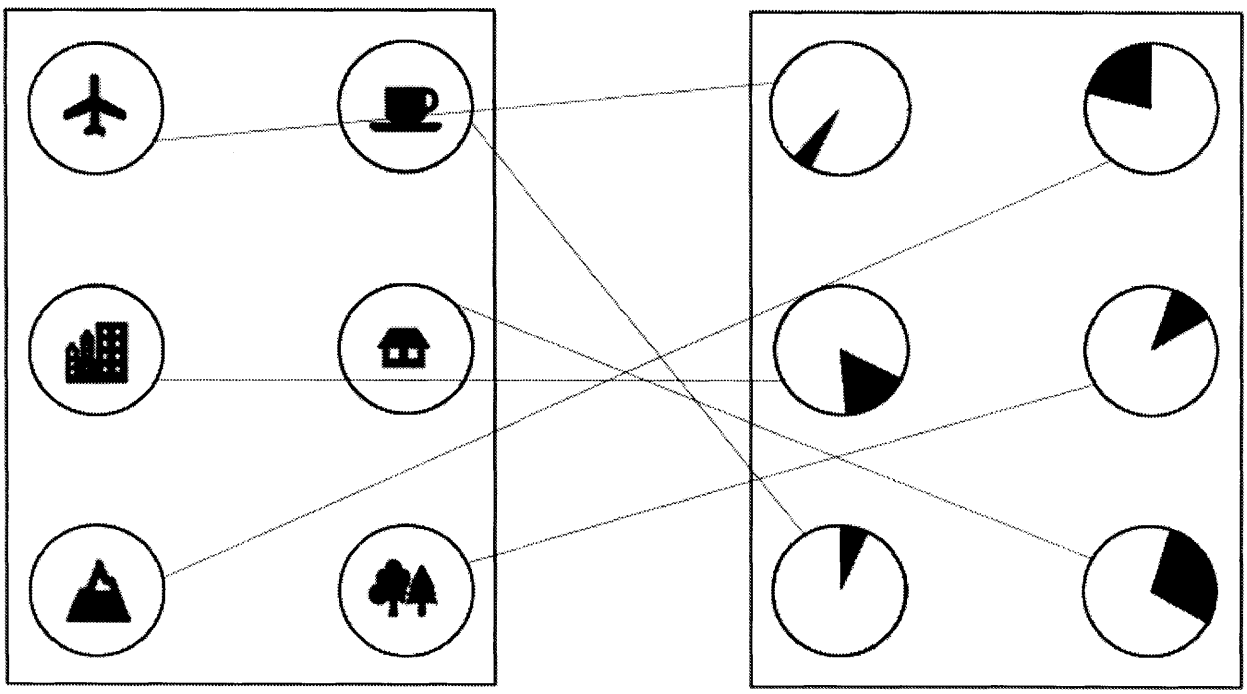


figure 4.6: multiple and flexible time and place for workfigure 4.5: activities mapping; sensory, mobility, physicalit sociability

4.3/ Meta/F2F Office and Hyper Leisure

Proposal for a **F2F Office** for the *nomadic information worker*

"Advances in telecommunications have transformed every airplane seat, conference room and dining room table into a 'virtual' office."

'Net Work', Wired, *March 1999*

Meta/F2F Office

· *multiple workplace and flex timers*

Working is becoming more and more an activity of multiple places and flexible time, particularly in the knowledge-based industries. Since the office is only one of many workplaces, workers can maintain a small 'home-base' for their computers and other mobile apparatus, which are arranged into pods to promote communication between team members. The notion of flex-time work means that the 10 hour work day can be chopped up into smaller increments, allowing work and other activities that constitute life to mix together at a finer grain. All this could also mean that the office's hour of usage is changed from a fixed 9 to 5 operation to a flexible-time environment.

· *office for physical interaction and collaboration*

Face to face communication and collaboration is the new role of the future office. The (down town or office park) office is therefore one of many workplaces –one which is especially catered

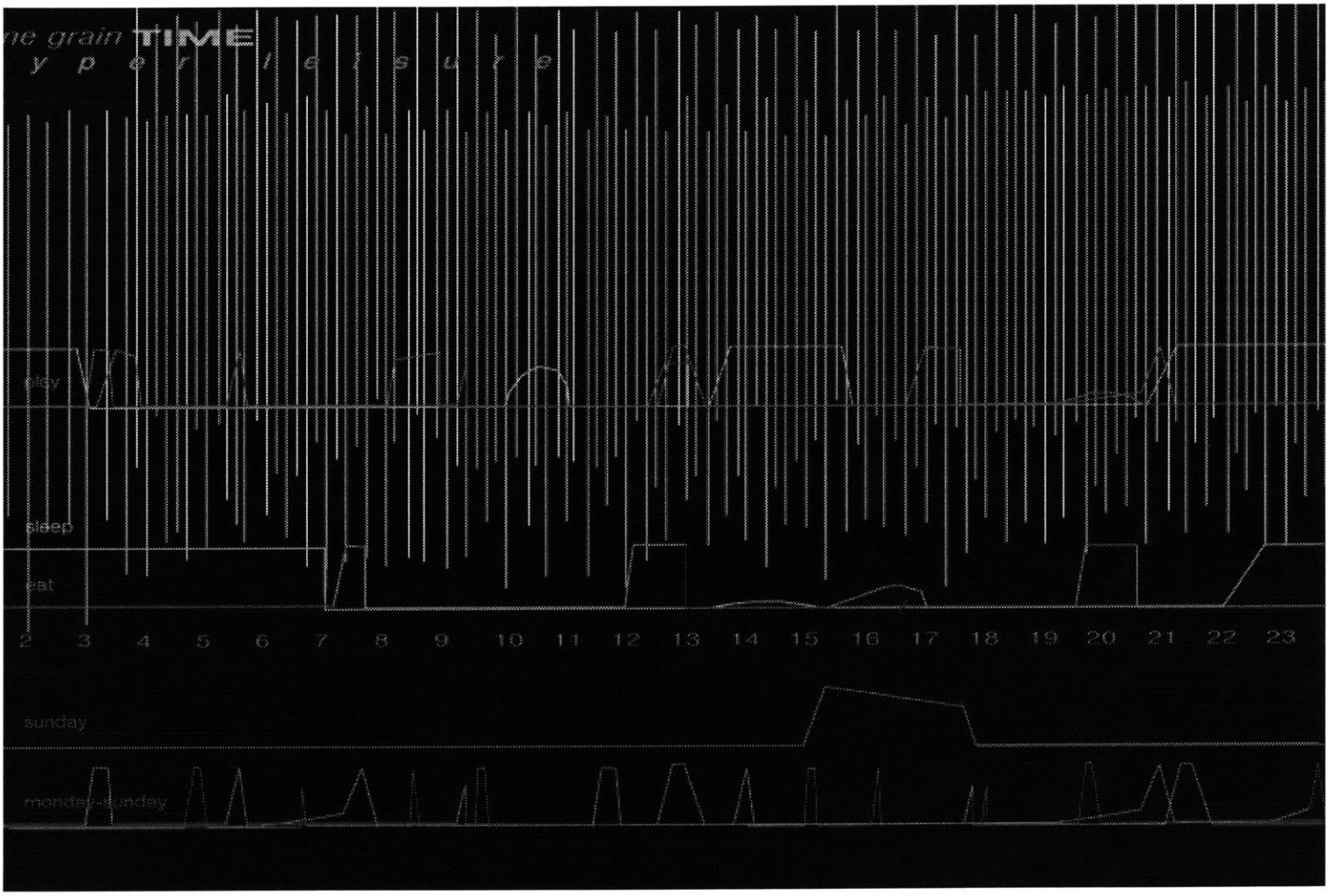


figure 4.7: fine grain timefigure 4.5: activities mapping; sensory, mobility, physicality and sociability

for activities which require physical interactions and group collaborations between workers. Despite new digital telecommunication technology and the growing sophistication of telepresence, physical proximity still promotes interaction. Many work activities are still best done face-to-face -such as brainstorming sessions, important decision-making meetings, gossip and other social activities that contributes to collaborative work.

- *Work 'n' play*

Given that the office is now where the more social and collaborative nature of work takes place, work 'n' play at the office does not seem too far fetched, especially if these social activities enhance creativity and interaction.

- *office for concentration*

A small part of the new workplace should also be reserved for high concentration work which cannot easily be done at home. This is a small place for solo effort.

Hyper Leisure

The new multi-task consumer now will spend their 30 hours of weekly free time[1] more spread out, given the flexibility from digital communications. The lure is the opportunity to make the most of that 30-hour free time by combining leisure with other more mundane activitie. For example, it is now possible to chek e-mail or play backgammon with a virtual friend between working on spreadsheets. Leisure time is no longer concentrated on Sunday, say between 3pm-6pm, but rather, quite spread over the

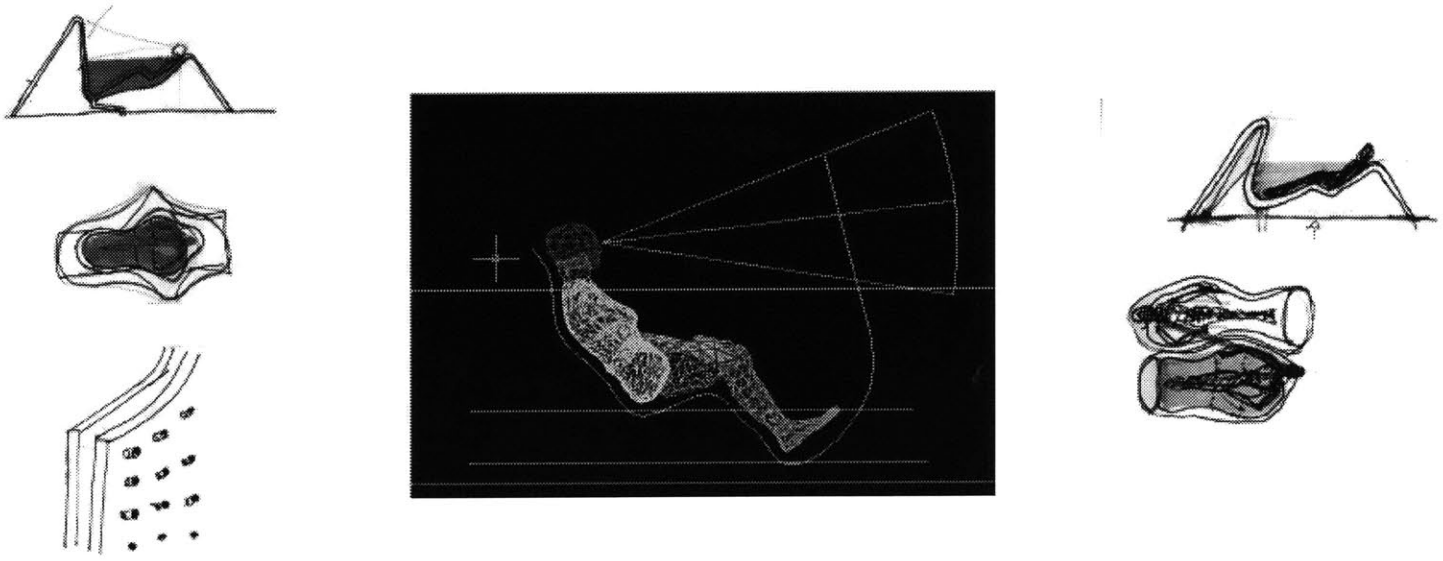


figure 4.8: surfing tub

entire week in tiny increments.

5: F2F Place

5.1/ city-scale strategies

5.2/ work and play programs

5.3/ the new terminal and F2F Place

6: City Speculations

Notation of time: 'natural-rythms' vs 'clock time'

Natural rythm

> task-orientation

-community in which task-orientation is common (usu. in peasant societies, farming or fishing communities) appears to show the least demarcation between "work" and "life". Social intercourse and labour are intermingled -the working day lengthens and contracts according to the task– and there is no great conflict between labour and "passing the time of day". (check out; Henri Lefebvre, *Critique de la Vie Quotidienne* [Paris, 1958], ii, pp. 52-56, prefers a distinction between "cyclical time" –arising from changing seasonal occupation in agriculture- and the "linear time" of urban, industrial organisation.)

-as soon as actual hands are employed the shift from task-orientation and timed labour is marked. It is true that the timing of work can be done independent of any time-piece –and indeed precedes the diffusion of the clock. Still, in the mid-seventeenth century farmers calculated their expectations of employed labour in "dayworkes".

Clock-time/Timepiece

-However, the computation is difficult, and dependent upon many variables. Clearly, a straightforward time-measurement was more convenient.

figure 4.9: summary from E.P. Thompson's Work, Discipline and Industrial Capitalism, Past and Present, #38

4.4/ ***Surfing*** **Tub:** *and other hybrid products*

4.5/ Towards A Work 'n' Play Manifesto

<u>questions</u> as clues

time: *1999*

what is our new 'rhythm' ?
hint: pre-industrial => natural rhythm of seasons and ocean tides
industrial => synchronization of labor due to the new division of labor and the resulting equation of time equals currency
informational => ?

which 'tides' do we attend now?
hint: 10001010101011000011110100 1001

what hasn't changed?

e.g. the body still exists and the mind is still part of the body
parents still need to look after children
humans still like to socialize and recreate
our sensory system is still largely unchanged

figure 4.10: the Work 'n' Play Manifesto

notes

[1] Studies have shown that, cntrary to popular belief, people's free time have stayed quite constant at 30 hours a week. 'The Pleasure Bin', *Wired*, March 99

5: the building: *F2F Place*

figure 5.1: F2F Place

5: F2F Place

5.1/ city-scale strategies

5.2/ the new Port and F2F Place

5.3/ Structural Strategy

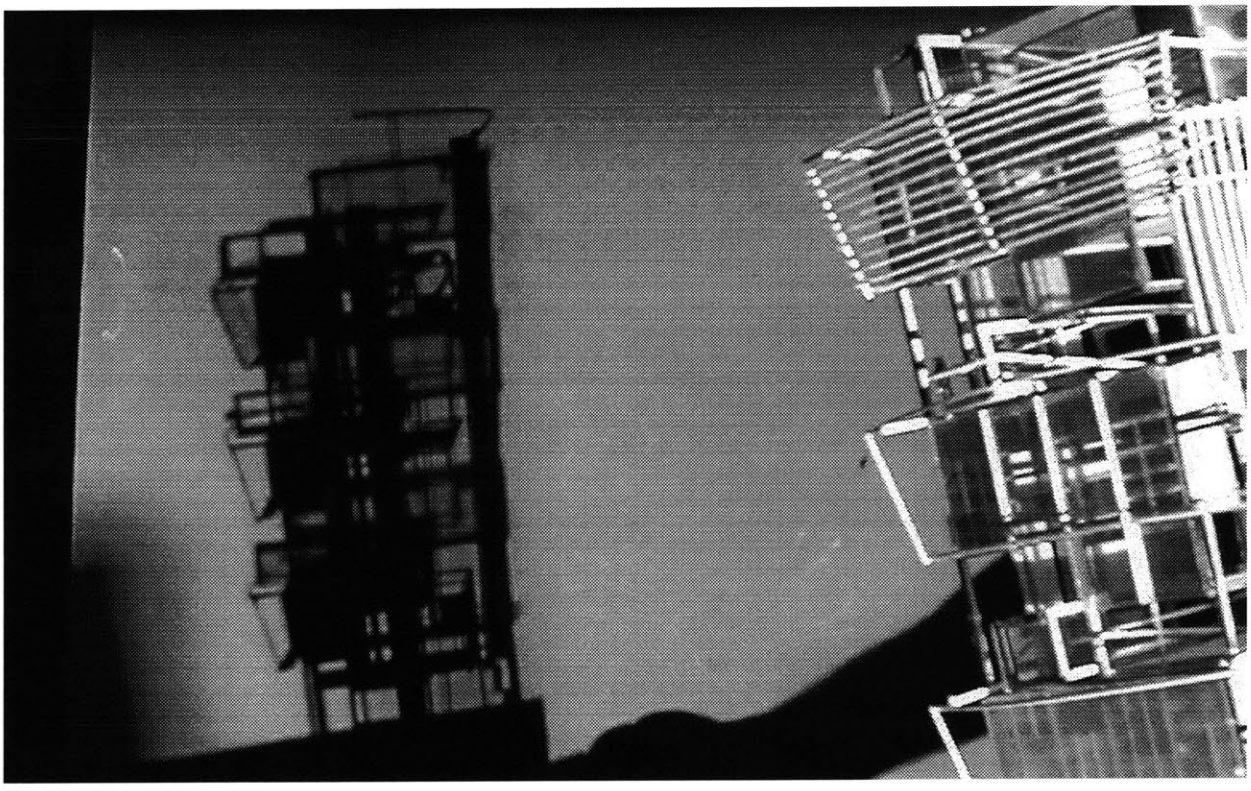


figure 5.2: model at 1:50 showing photo voltaic suncreens on F2F Place

5.1/ city-scale strategies

infrastructure and energy strategy

all PABT buses run on hydrogen fuel-cells

islet park's ground is covered with polymorphic photovoltaic in the summer to collect and out energy back into new York's infrastructure

sunscreen on the south faces of F2F Place is made of transparent phototvoltaics panels

data screen and photovoltaic screens

the north facade is covered by a massive data screeen, advertising back to Times Square. The south and east facades most of the office hotelling uses are screened by transparent photovoltaic panels.

public space for Manhattan

roofscapes with *hyper trac, velodrome, rest and strech,* and *islet park*

nexus of flows between the previously severd North and South wings

thru-cartube/people's ramp, hotel parkiing tube/people's ramp

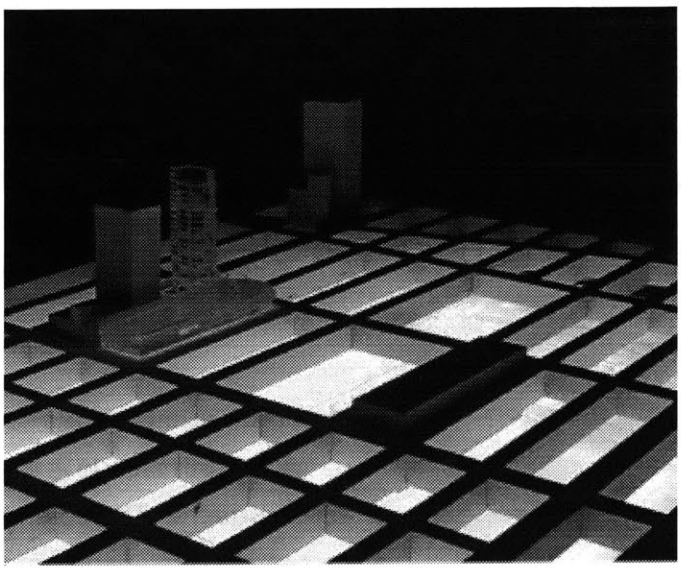
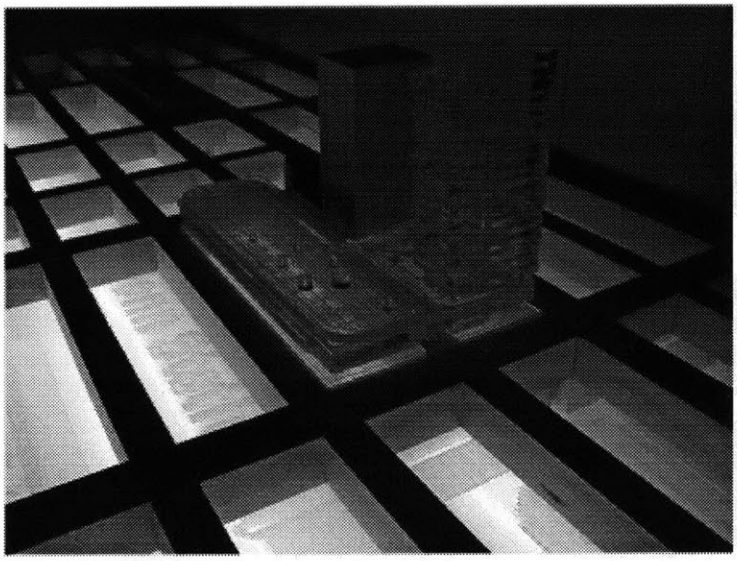
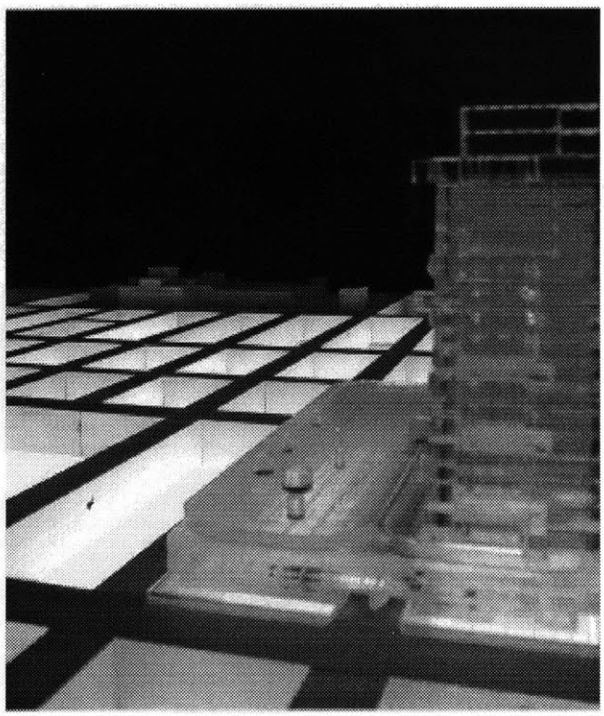


figure 5.3: Site Model, infrastructure, flows and hubs





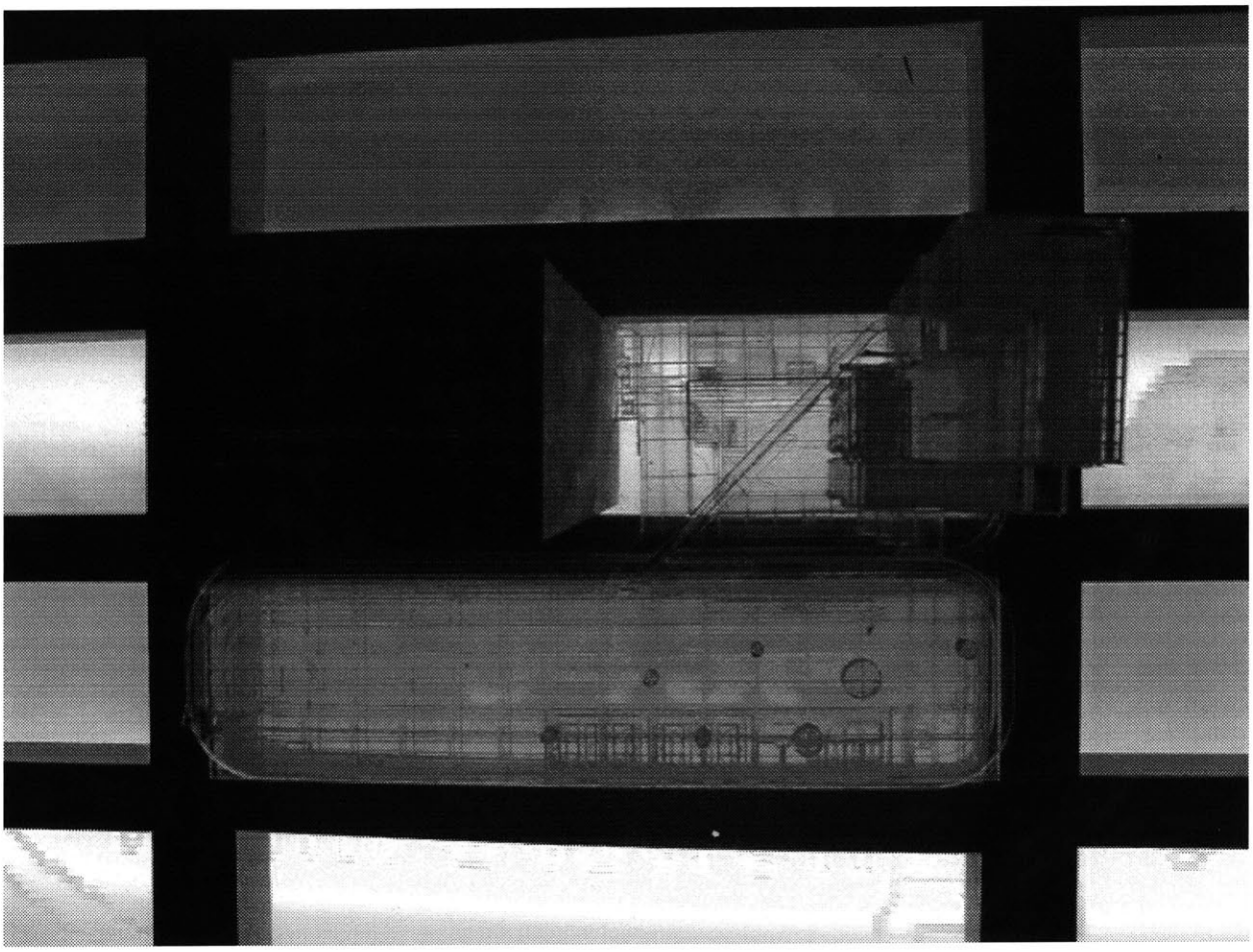


figure 5.4: F2F Place

5.2/ the new Port and *F2F Place*

glass court, urban egg and mixing buses and people atrium

public space at the port level

hyper_active gym @ G and 2 levels

Urban Egg Omni @ 3 and 5 lvels

roofscapes with *hyper trac, velodrome, rest and strech,* and *islet park*

vertical street in the F2F place

lobby and techi support

cyber tank and spa

ether garden

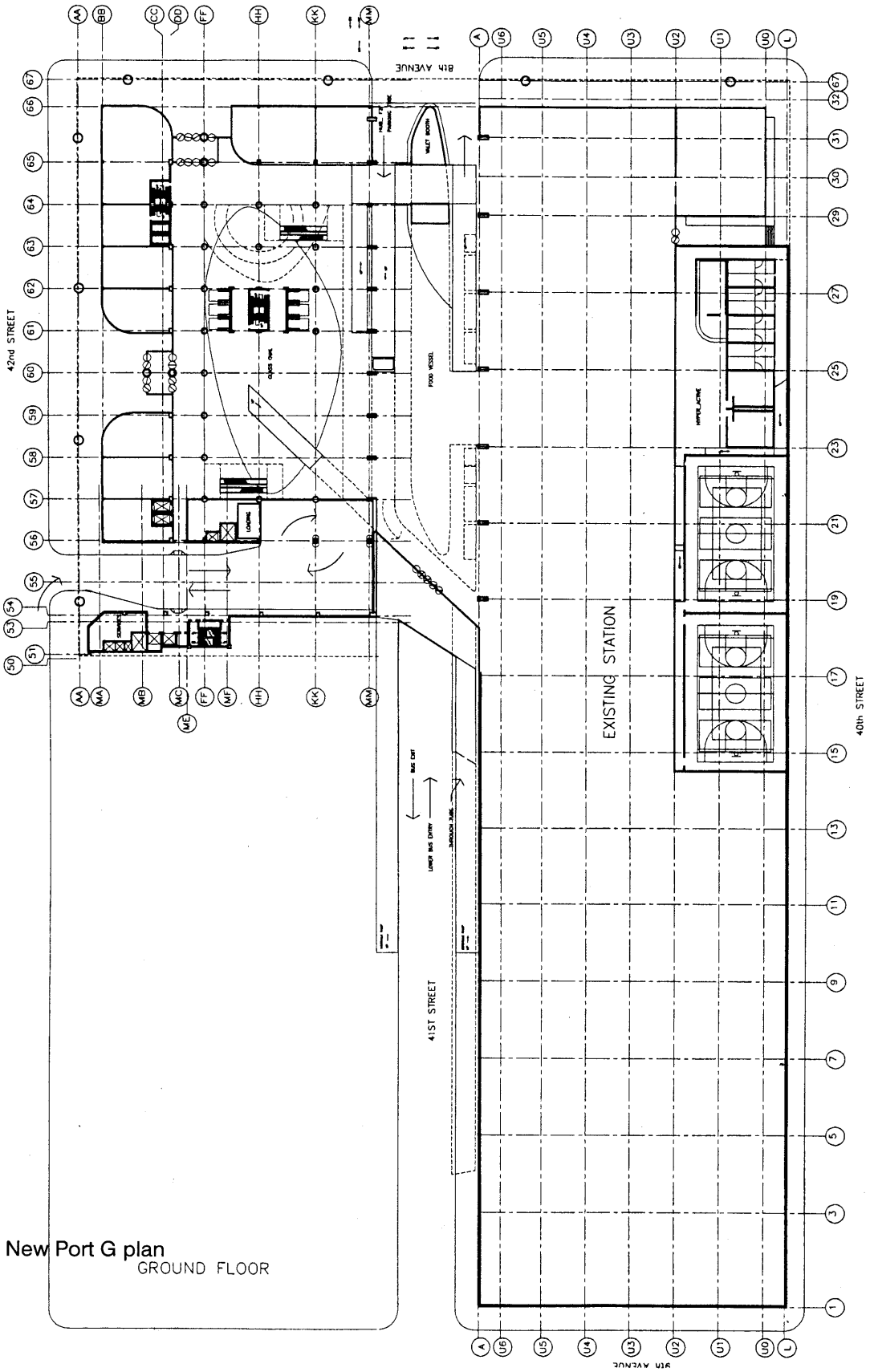


 figure 5.7: New Port G plan

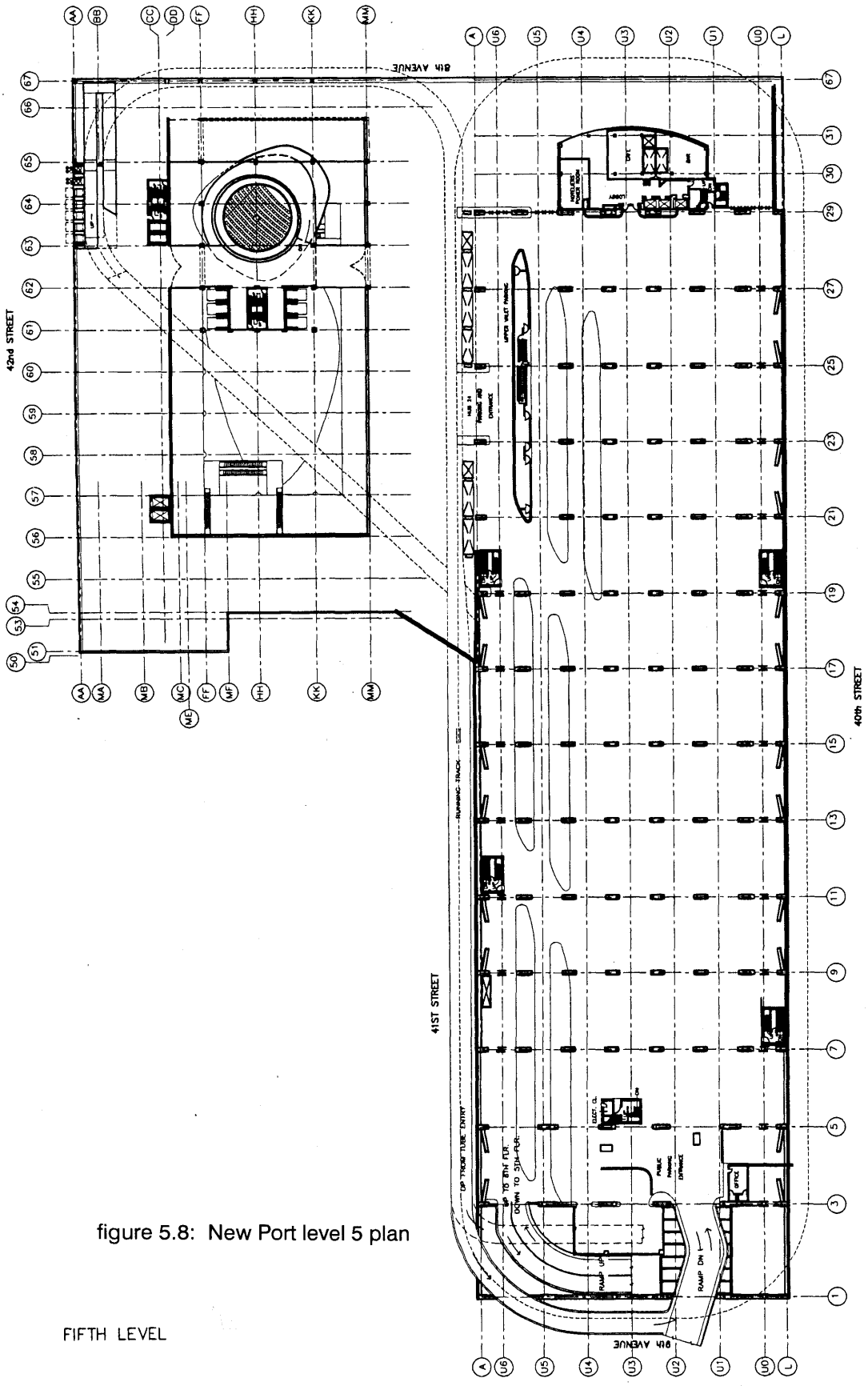
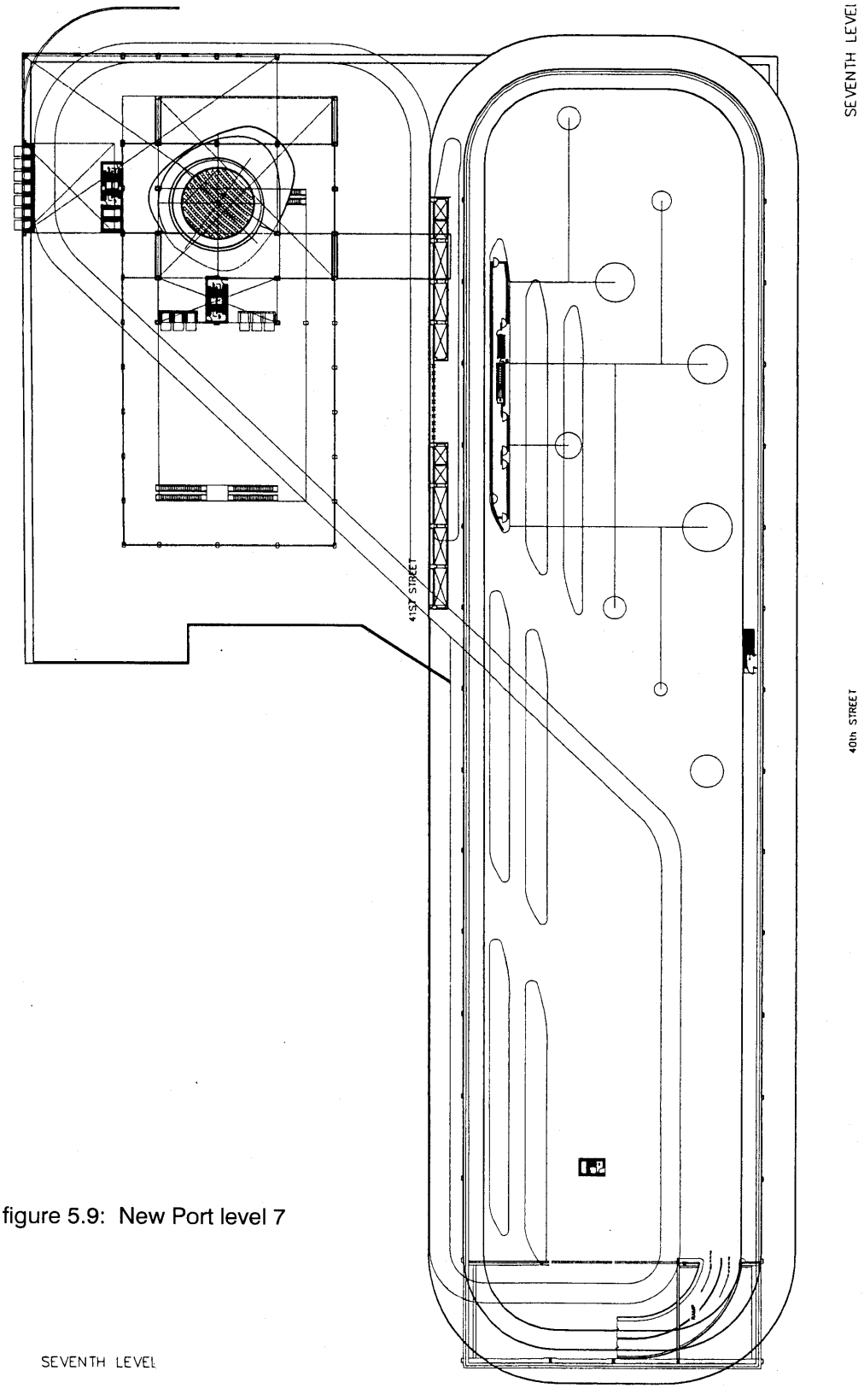


figure 5.8: New Port level 5 plan



104 figure 5.9: New Port level 7

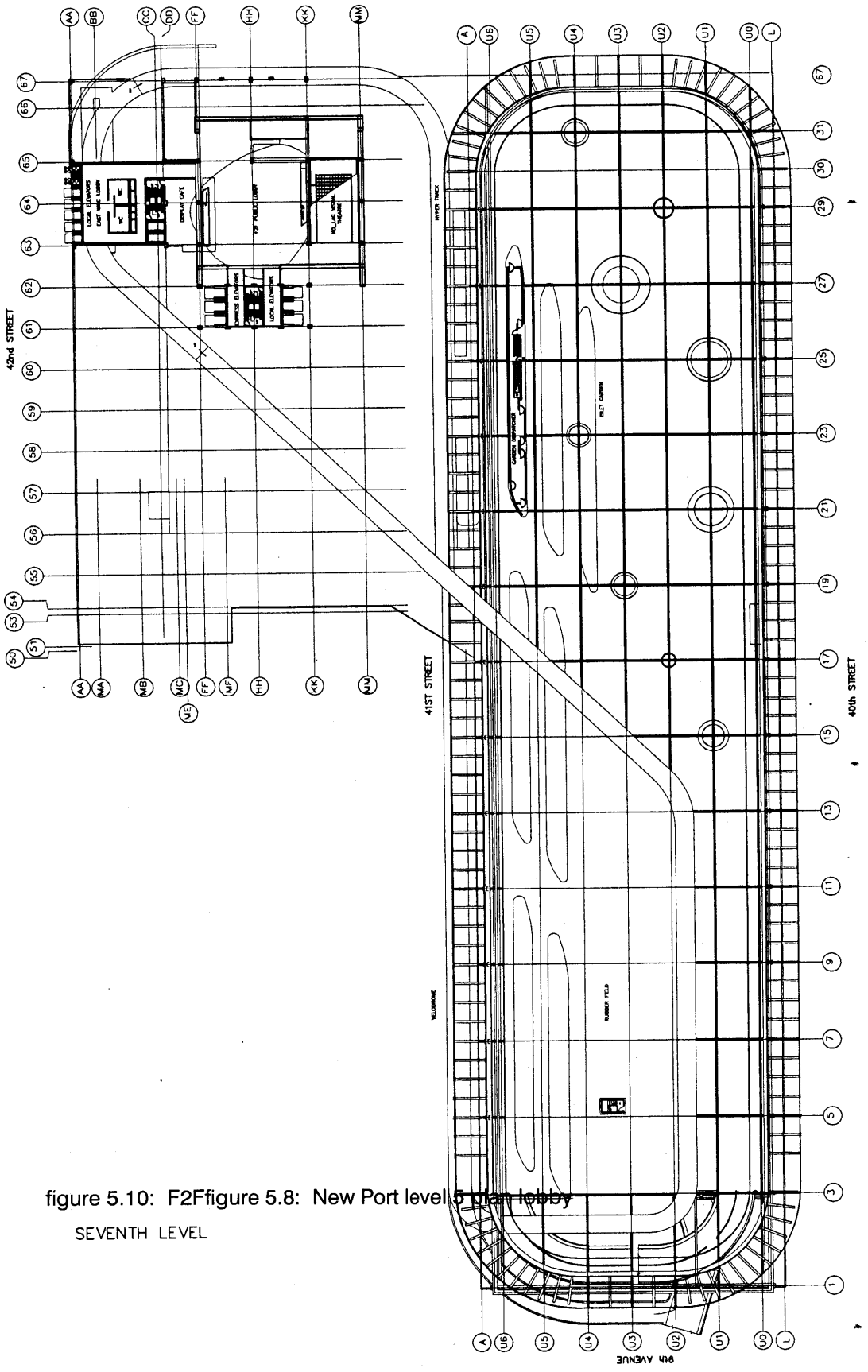


figure 5.10: F2Ffigure 5.8: New Port level 5 plan lobby

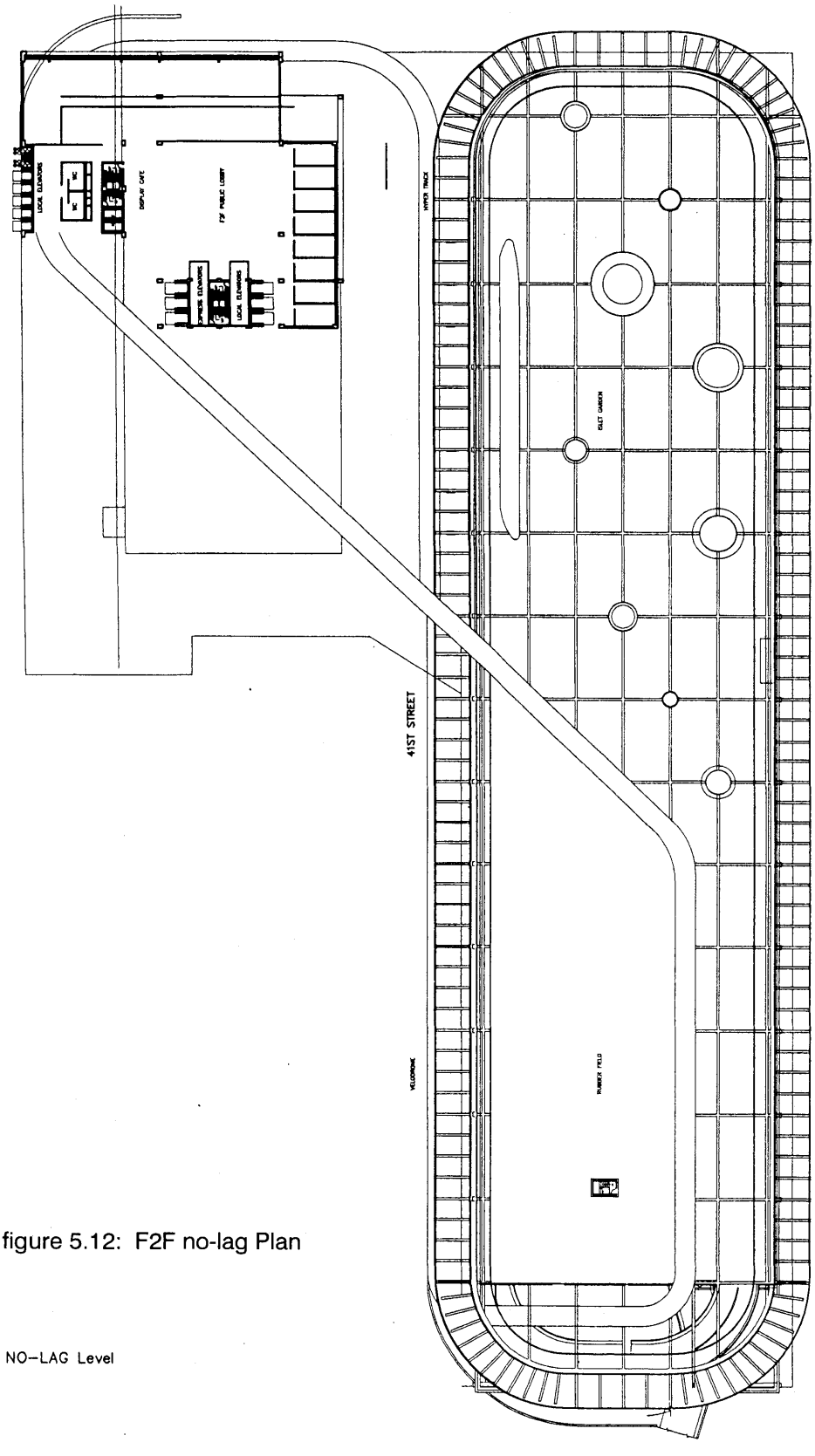


 figure 5.12: F2F no-lag Plan

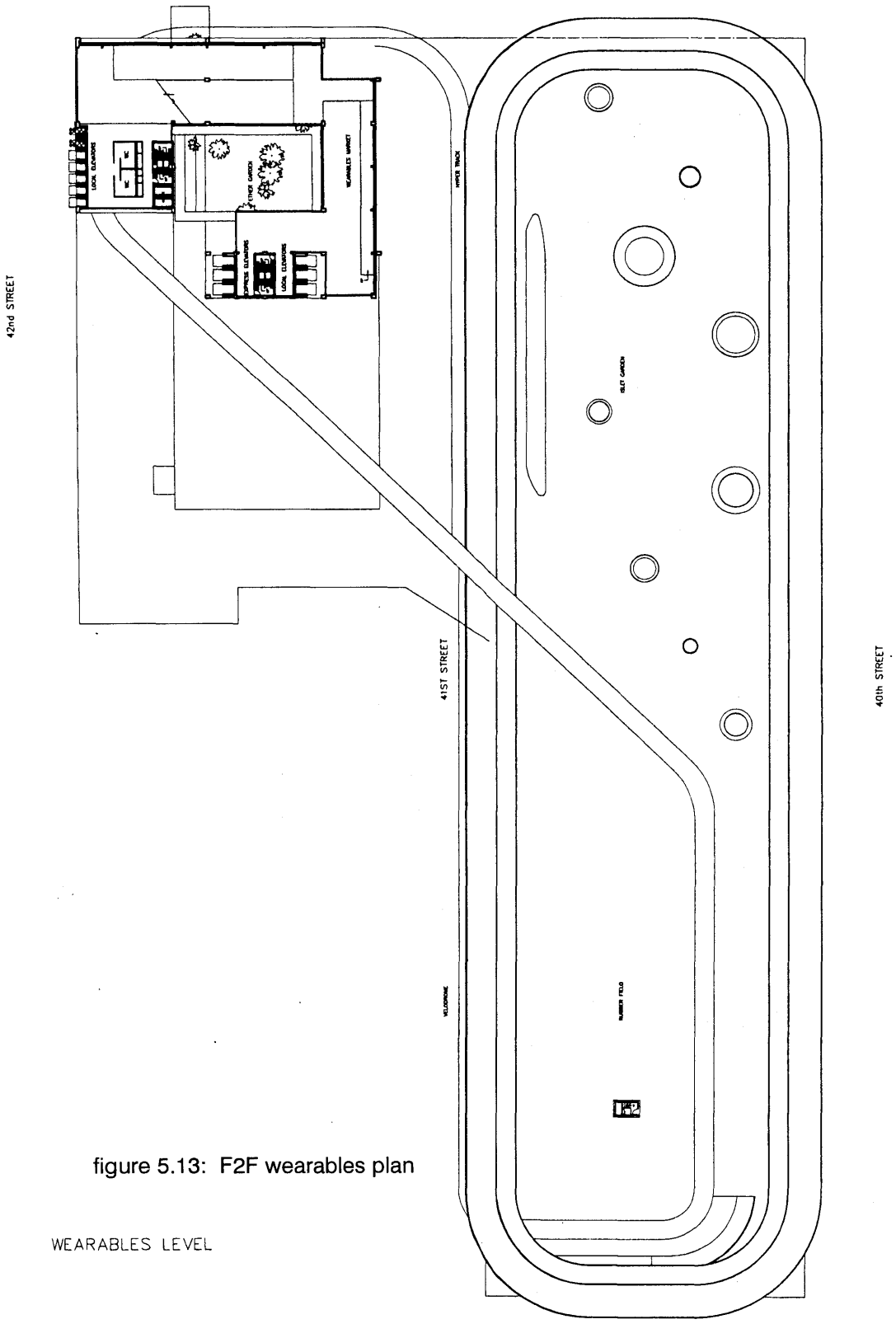


figure 5.13: F2F wearables plan

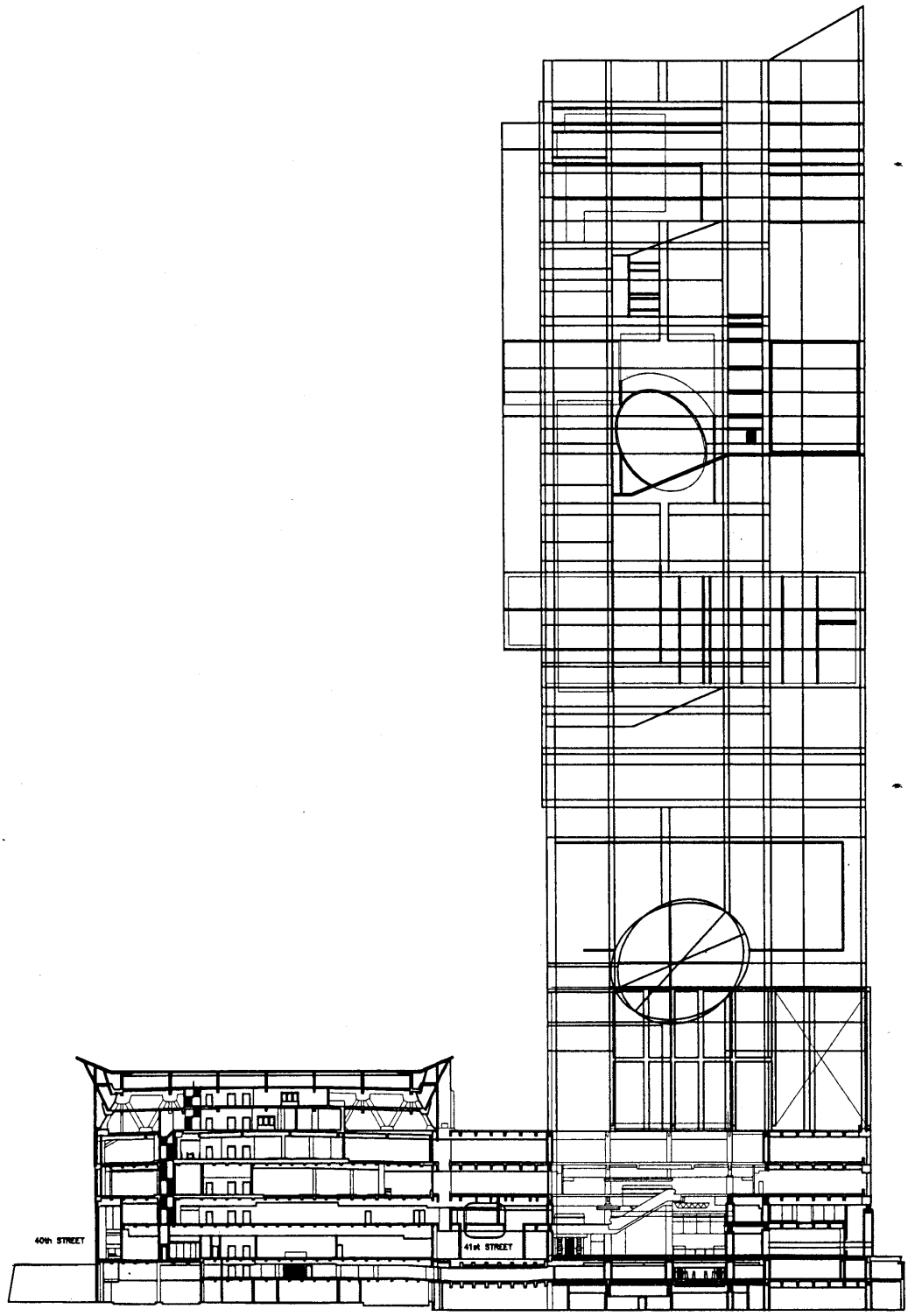


figure 5.14: section cut north-south

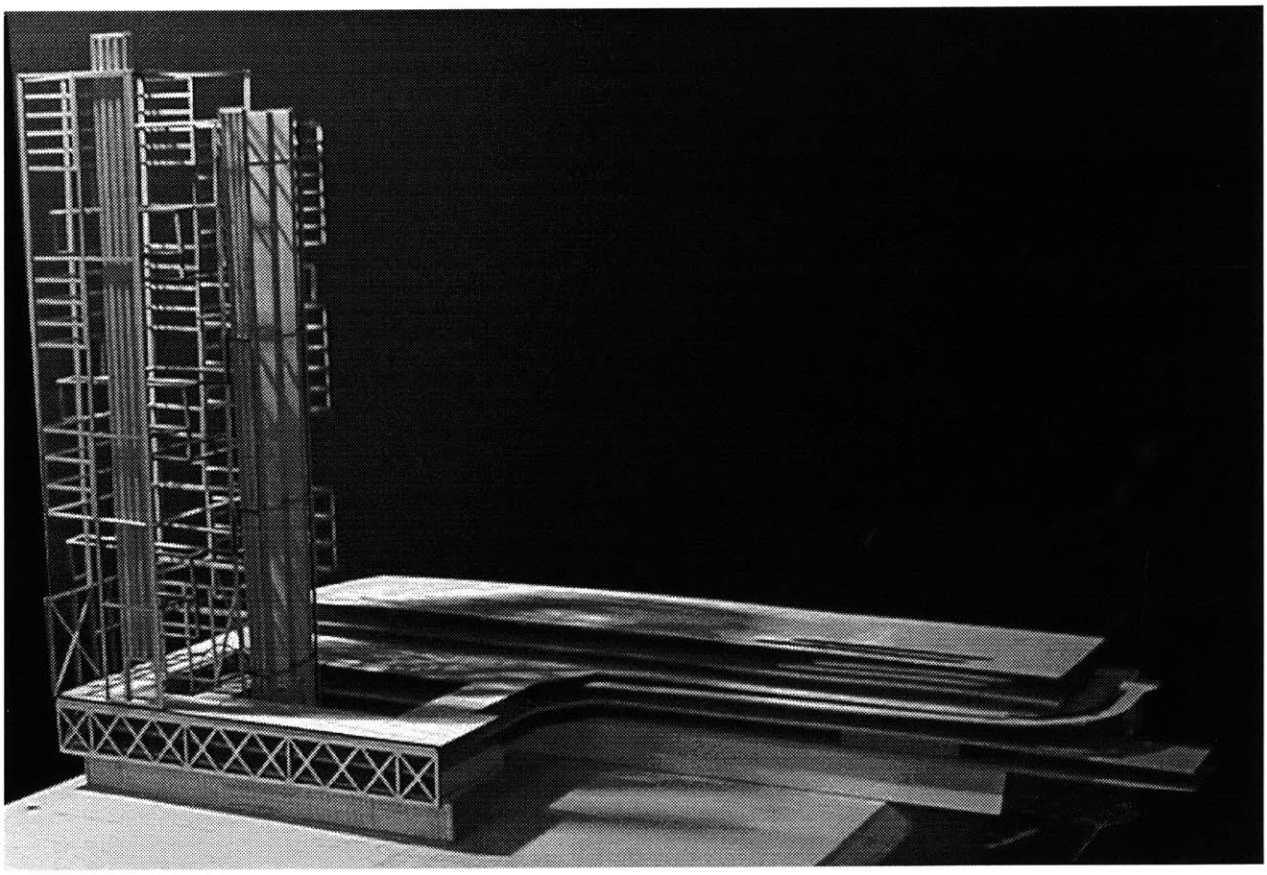


figure 5.15: structure model @ 1:30

5.3/ Structural strategy

2-grids: Pabt's urban truss system and its internal bus circulation

the desoign of F@F Place on top of PABT's North Wing had to work with two structural systems

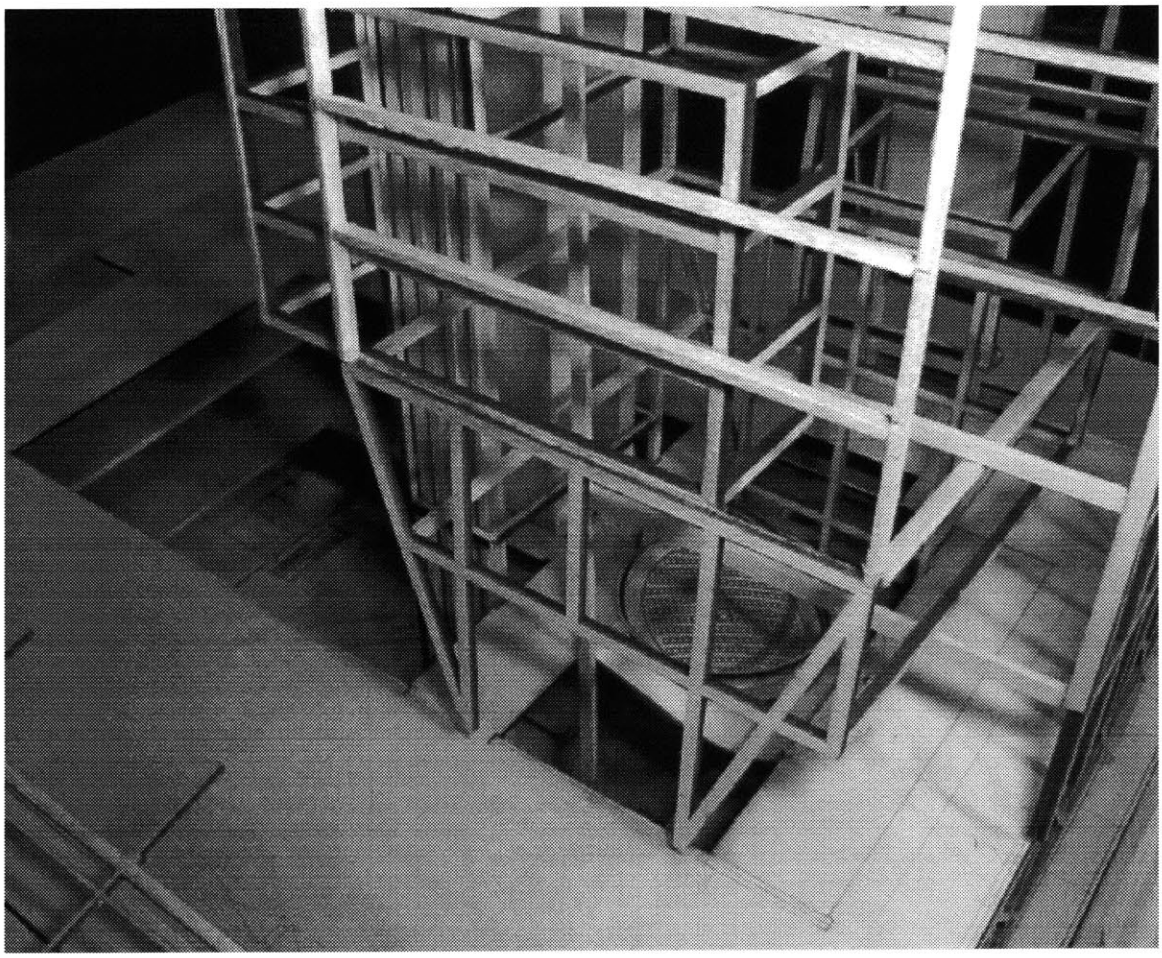


figure 5.16: structure model @ 1:30

6: City Speculations

As high-speed telecommunications continue to develop causing the material basis of society to transform from post-industrial to informational, major cities are becoming highly networked and turn into 'command and control' points of the new informationall economy. And as telecommunications allow 'decentralization with centralization', these global cities will also become even more important 'physical' meeting places, while also acting as major centers for leisure and culture. Technology has extended the geographic reach of these cities to enable people in these world capitals to interact more, both electronically and face-to-face. The network city is becoming more and more a place of intense physical communication and interaction, a place of face-to-face collective activities, and of leisure and culture.

New patterns of living and working are also emerging from these technological changes. I suspect that all aspects of work that are necessarily face-to-face and collaborative --that is the particularly sociable side of work-- will still have an even more significant place in the city, following the logic of Saskin and Castells who showed in their studies that the decentralizing effects of telecommunications is closely accompanied by certain centralizing forces. I also predict and hope that downtowns will once agai become live/work neighbourhoods for certain groups of people.

Acknowledgements

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It is difficult to express the deep appreciation my parents deserve for the opportunities, encouragement and unwavering love they have given me. Despite my having lived away from home for more than a decade, they have made me who I am. Lastly, I want to thank my dear friend Derek for the hours of untiring help and many overnights at school, as well as for his genuine interest and invaluable criticism. But more importantly, thank you Derek for introducing me to an open and challenging way of thinking about design -and life.

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